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CANADIAN GEOGRAPHICAL JOURNAL

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By Charles Camsell

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Geography of World Events --- Egypt

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Effective with this issue of the Canadian Geographical Journal the publisher relinquishes his duties as such, and commencing with April 1936 the Journal will be issued under the direct auspices and control of the Canadian Geographical Society. In concluding a 40 month period of continuous publication of the Journal the publisher wishes to extend his grateful thanks to all those of the members and Officers of the Canadian Geographical Society who have lent him their encouraging support in the rather difficult task of keeping the publication alive. The work has had its compensations in the form of many kindly references from readers, contributors and business associates. May the future publishing organization be fortunate in securing this same loyal support.

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This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustration, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

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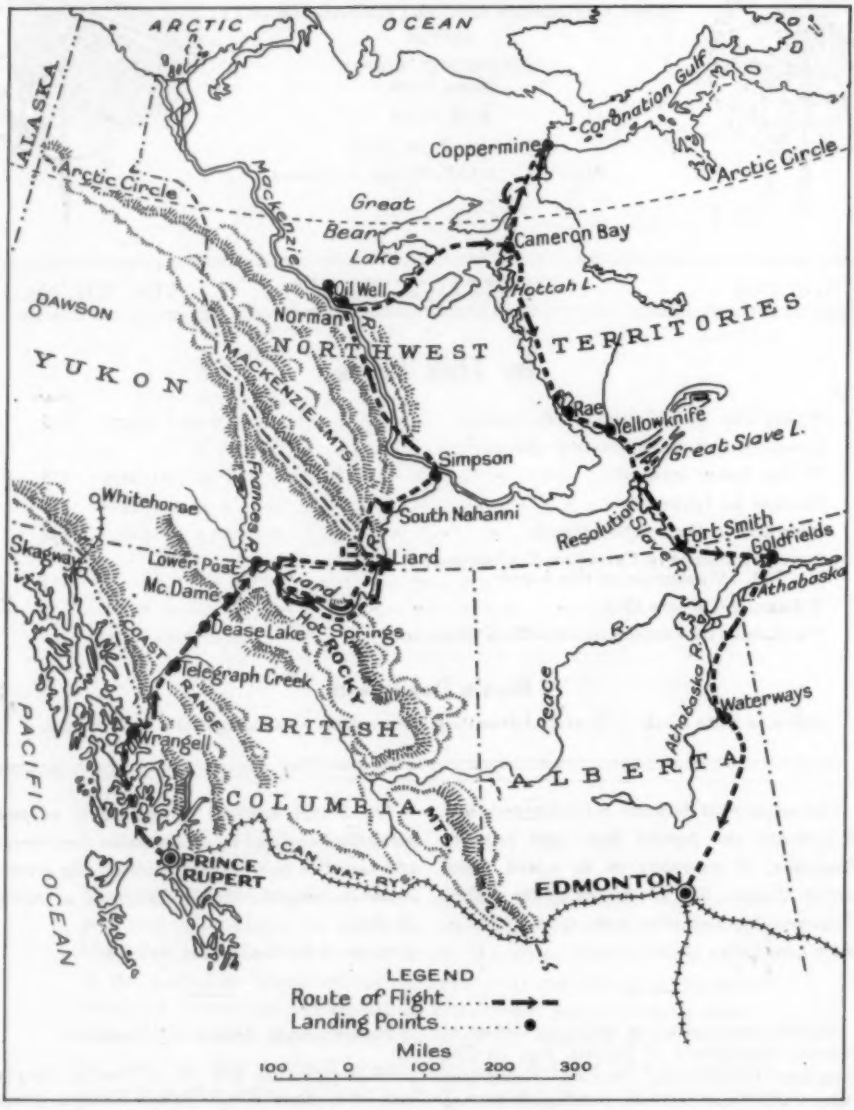


In a few days, by air, Dr Camsell covered territory which took him years to traverse on foot and by canoe in his earlier days in the north-west.

Flying Through Northwestern Canada

By CHARLES CAMSELL

IN August, 1935, with C. H. Dickens, pilot, W. Sunderland, photographer, and A. D. McLean, of the Civil Aviation Branch of the Department of National Defence, I made a roundabout journey of 4,000 miles by airplane from Prince Rupert on the Pacific coast to Edmonton. The most important part of the journey from a geographical point of view is described below.

Leaving Prince Rupert we stopped over night at Wrangell in Alaska, and the next day, following Stikine river, we passed Telegraph Creek, and shortly afterwards directed our course over the Pacific-Arctic divide to Dease Lake, one of the headwaters of Liard river. We then followed Dease river to its junction with the Liard.

From Fort Liard we returned west almost to Dease river. A landing was made in the so-called "Tropical Valley" at some hot springs near Devils Gorge.

Most of the stories that have been written about this district have been woven around the occurrence and climatic effect of these streams. The legend of a tropical valley has persisted for many years; but, having visited this valley both in winter and summer, I can state positively that the springs have no effect whatever on the climate and that tropical conditions do not exist at any of them.

Helveker Mountain, Stikine River area, British Columbia.

The next day we made another flight northwest from Fort Liard through this unmapped area towards the headwaters of Beaver river and came out at the hot springs about 20 miles up South Nahanni river.

The critical, though most interesting, part of the flight, from the standpoint of both aerial navigation and geography, was that between Wrangell on the Pacific coast and Fort Liard on the western edge of the Great Plains, a distance of some 700 miles. For, though planes not uncommonly enter the upper Liard country from the west and the lower Liard from the east, I could not find any record of a single direct flight over the whole width of the Cordillera in this region. There are very few travellers alive who have made this crossing by the land and water route.

The divide at Dease lake is only about 2,600 feet above sea-level, and, therefore, it is 1,000 feet lower than Yellowhead pass or 1,700 feet lower than Kicking Horse Pass. Dease lake itself is 2,500 feet above sea-level and its waters flow by way of Dease and Liard rivers to the Mackenzie and thence to the Arctic ocean. At Fort Liard the level is estimated to be about 500 feet, and so the total fall in the river from Dease lake to that point is about 2,000 feet.

A contrast between Dr. Camsell's earlier explorations and his latest is to be seen in this photograph taken on the Liard River in the winter of 1897-98 on the way to the Klondike. Members of the party from left to right are A. F. Camsell, Charles Camsell, D. W. Wright and A. N. Pelly.

This means a very steep gradient for a stream as large as the Liard, which, consequently, is a difficult and treacherous course to follow by boat. There have been few, if any, travellers along it during the last thirty-five years. The rapids and canyons where it cuts through the mountains between Smith and Fort Nelson rivers constitute a real barrier to communication between the Cassiar country and the Mackenzie valley. Even the natives rarely, if ever, make the crossing. The people of the Cassiar do not know the Mackenzie river people and there are no trade or other relations between them. To travel by canoe from the one region to the other would necessitate many days of hazardous navigation. Moreover, between the mouth of the Dease and the mouth of the Fort Nelson, a distance of about 300 miles, there are no trading posts or other settlements, and one might make the entire journey without meeting a soul. In our flight we made the distance from Dease lake to Fort Liard in four and three-quarter hours.

The Yukon, which is the northwestern component of the Dominion, was once partly under Russia's influence. As early as 1741 it had been penetrated from the Pacific by Russians, and in 1799 the control of what their Emperor, Paul, regarded as his share of the American continent was vested in the Russian Fur Company. One hundred years ago a trading post was established by this company where now stands the town of Wrangell. No effort was made, however, to extend trade into the interior until the placer miners who had joined in the Cariboo gold rush of 1860 began to enter the country.

One hundred years ago, too, the upper waters of Liard river were reached from the Mackenzie by officers of the Hudson's Bay Company. They discovered and named Dease lake and explored some of the branches of Liard river. Shortly afterwards posts were established at Halkett, Frances Lake, and Dease Lake, and for about thirty years Liard river was used as a trade route to the Yukon. However, the perils of navigation and

Members of Dr Camsell's 1935 aerial expedition across the Rockies. Left to right: W. Sunderland, C. H. Dickens, A. D. McLean, Dr Camsell.

the difficulty of securing voyageurs even at double pay made the trade unprofitable and the last of the posts was abandoned in 1865. The connection between Mackenzie river and the upper Liard has never since been re-established as a trade route.

From the time of the withdrawal of the traders until the discovery of placer gold in the Cassiar in 1872, the whole country seems to have been forgotten. Though miners entered from the east it was soon found that it was easier, though still very difficult, to make connections with the outside world by way of the Stikine. This has since been the medium of entry into the Cassiar, where mining is still the principal industry, although the production of gold has at no time been very large.

The most important explorations of the country have been made under the auspices of the Geological Survey, the expeditions of G. M. Dawson and R. G. McConnell in 1887 being particularly noteworthy. Dawson's route to the Yukon took him through the country by way of Stikine, Dease and Frances rivers, and McConnell followed the same route as far as the mouth of the Dease but turned there down the Liard to the Mackenzie. Their surveys still constitute the most important contribution to the geology and geography of the territory we are considering. In view of the time and the circumstances in which the exploration was made, I have always considered McConnell's expedition to be one of the most remarkable ever made by an officer of the Geological Survey. From the time he left the Pacific at Fort Wrangell on April 22, 1887, until his return there on October 1, 1888, he covered 4,000 miles — 3,000 by water and 1,000 on foot. Sufficient credit has never been given to him for having overcome the difficulties and dangers of traversing about 500 miles of Liard river. The journey was made in a home-made boat with two men, at a season of the year when the water was high and travelling was considered to be very unsafe, in fact, almost impossible. Mr McConnell's survey of the river is still the one that stands on the map of Canada.

Virginia Falls, on the South Nahanni River, a tributary of the Liard. R. C. A. F. Photograph.

The so-called "Tropical Valley" in the valley of the Liard River.

Photograph by Canadian Airways Limited.

Hell's Gate at the lower end of the Grand Canyon of the Liard River.
Photograph by Canadian Airways Limited.

No doubt, several other travellers, trappers, or prospectors have made the traverse of Liard river between the Cassiar and the Mackenzie, but not one has left any written record. In 1897-98 I travelled the whole length of Liard river to Frances lake and in August 1899 I made the distance between Dease lake and the Mackenzie by canoe. During that winter of 1897-98 I was one of that great army of men coming from all corners of the globe and travelling by a variety of routes from Edmonton, Ashcroft, Vancouver, and Seattle to the Klondike gold fields. But few of these gold seekers ever kept or published records of their explorations; I certainly kept none.

In those romantic days I covered the section of my recent flight between Wrangell and Simpson in multifarious ways. From Simpson I travelled with my companion up Liard river by boat for about 300 miles, almost to Toad river, where, halted by ice, we were forced to built a cabin and make preparations to continue our journey on the ice. As soon as the river was fit for the purpose we sallied forth on snowshoes, dragging a toboggan which contained our supplies and equipment. Our daily procedure was to draw a load up the river for about 10 miles, leave it there, and then return to camp. We continued in this fashion for seven or eight days, by which time we had moved all our material except the camp. Then, on the last day, we moved the camp 20 miles, and from that point again began to bring the whole outfit forward another 10 miles. By this means we eventually passed through the Devils Gorge in January and reached the hot springs, where we camped for nearly two weeks. By the time spring had arrived we were on Frances lake.

Between the mouth of Dease river and Telegraph Creek, a stretch of 250 miles, I have tramped in summer with a pack on my back, and I covered the distance between Telegraph Creek and Wrangell several times during the winter of 1898-1899 when I had the honour of carrying Her Majesty's mail, making the round trip once a month.

Fort Liard near the point where British Columbia, the Yukon and the North West Territories meet.
Photograph by Canadian Airways Limited.

My recent flight contrasts strangely with these earlier travels, and I naturally derived much pleasure — though tinged at times with sadness — riding at ease in a plane over hundreds of miles of territory, which I had once struggled over in discomfort, and gazing upon scenes that recalled amusing or tragic incidents of thirty-five or more years ago. With the exception of the unknown territory north of Liard river I had travelled over practically every foot of the way on snow-shoes or by canoe. I took years to do it, however, whereas on this flight I made the journey in seventeen days (from August 1 to August 17), included in which were six days when we could not travel because of bad weather.

In our flight across the mountains from the Pacific to the Great Plains, the most important results we obtained were of a geographical nature. Airplane photographs were taken at critical points in the Coast range and in the interior plateau region as far as the junction of Dease and Liard rivers. From that point to Fort Liard on the eastern side of the mountains numerous photographs were taken of the immediate valley of the river and of a large part of the region lying north of the river.

These photographs and observations show that the section across the Cordillera along the route we took is physiographically very different from what it is anywhere in the region extending south to the International Boundary. True, there is, bordering the Pacific, the same belt of high, rugged, glacier-clad mountains, known as the Coast range, which has a width along the Stikine river of about 80 miles. But, east of this Coast range, a great plateau country with rounded summits reaching a height of 4,000 feet may be followed northeasterly to the Cassiar range, which has a width of 50 miles and crosses Dease river on a northwesterly strike between Canyon creek and Rapid river. Beyond this range, too, another plateau extends eastward, right through to the Great Plains region, between the extreme north of the Rocky mountains and the southern end of Mackenzie mountains. These two groups

A view of Great Glacier.

of mountains do not lie in tandem; they lie in the same north-northwesterly strike, but Mackenzie mountains are offset by a gap that centres about the mouth of Fort Nelson river and opens out to the southeast.

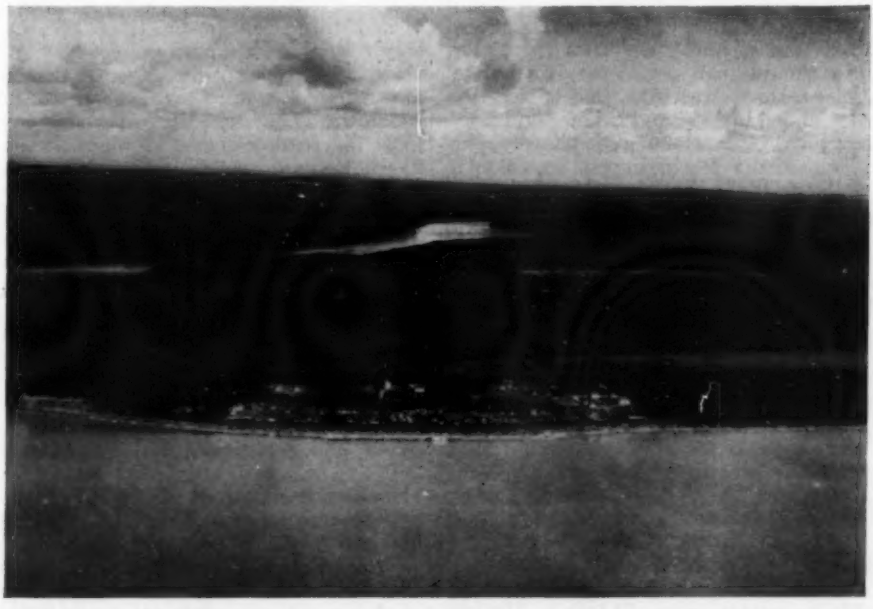
The Cassiar range, so named by Dr. G. M. Dawson, is apparently a prolongation of what is called on more recent maps the Stikine mountains, a great group of mountains forming the divide between the watershed of the Stikine and that of Finlay and Turnagain rivers on the east. Northwest of Dease river the Cassiar range seems to pass gradually into a high plateau that separates the waters of the upper Liard from those that flow into the Teslin and thence into the Yukon.

The plateau east of the Cassiar range is characterized by a fairly even skyline and by mature, rounded summits which seldom rise above the forest line. Some of it is almost flat. Timber is general and is quite thick in the broad and flaring valleys of the streams that flow through the plateau. These streams frequently meander, and Beaver river, especially about half-way up its course, reminds one of a prairie stream as it wends its way through a broad, wooded valley. In certain parts of this plateau there are many lakes, notably in the country east of Coal river, but farther east, towards Mackenzie mountains, lakes are rarely seen.

The streams traversing the plateau north of Liard river, such as Labiche, Beaver, Smith, and Coal rivers, are incorrectly indicated on existing maps. Beaver river in particular is very much out of position, the source of its westerly branch being actually about a degree and a half west of the position now given to it on published maps. In fact, this whole pleatau is but a part of a great unknown area thousands of square miles in extent, lying north of the Liard and stretching from Frances lake eastward to the Mackenzie. This area is wholly unexplored except for a belt of about 100 miles along Nahanni river. It is bounded on the north by Ross and Gravel rivers, along the course of which a survey was made by Joseph Keele of the Geological Survey in 1907-08.

The Rocky mountains definitely terminate at Liard river, after extending

Kates Needle from the east, dominating the Coast Range, in the vicinity of the Stikine. Over 10,000 feet high.



Fort Norman at the junction of the Mackenzie and Great Bear Rivers. The view is looking north.
Photograph by Canadian Airways Limited.

The junction of the Liard and South Nahanni Rivers.

R. C. A. F. Photograph.

as a continuous group of ranges for about 1,000 miles, and then pass gradually into the plateau region to the north. This feature was first recognized by McConnell in 1887 and is now confirmed by the observations and photographs taken on my recent expedition. South of the river the skyline is cut by a series of sharp peaks which, in some places joined by knife-edged ridges, stand well above the timber line, whereas to the north the topography is subdued, with rounded summits that only very occasionally reach beyond the timber line.

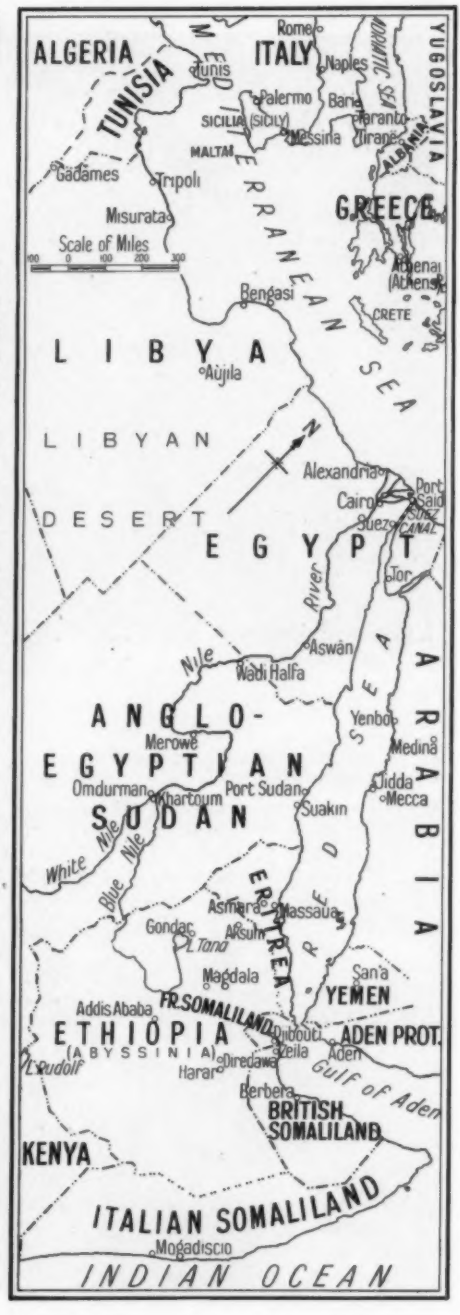
Mackenzie mountains begin at latitude 60 degrees, immediately west of the Liard, and extend northward and then northwesterly for about 600 miles as a gradually broadening belt of mountains, which, on the line of the Ross and Gravel rivers, have a width of 300 miles according to Keele. Mackenzie mountains are said to be the greatest single group of mountains in the whole of Canada. They comprise some 75,000 to 100,000 square miles, their eastern side being visible from Mackenzie river all the way from Fort Simpson almost to Fort Good Hope. They are largely unexplored, and their structure and history are unknown. They constitute perhaps the most inaccessible region throughout the Dominion and in all probability will be one of the last areas of this country to be accurately mapped.

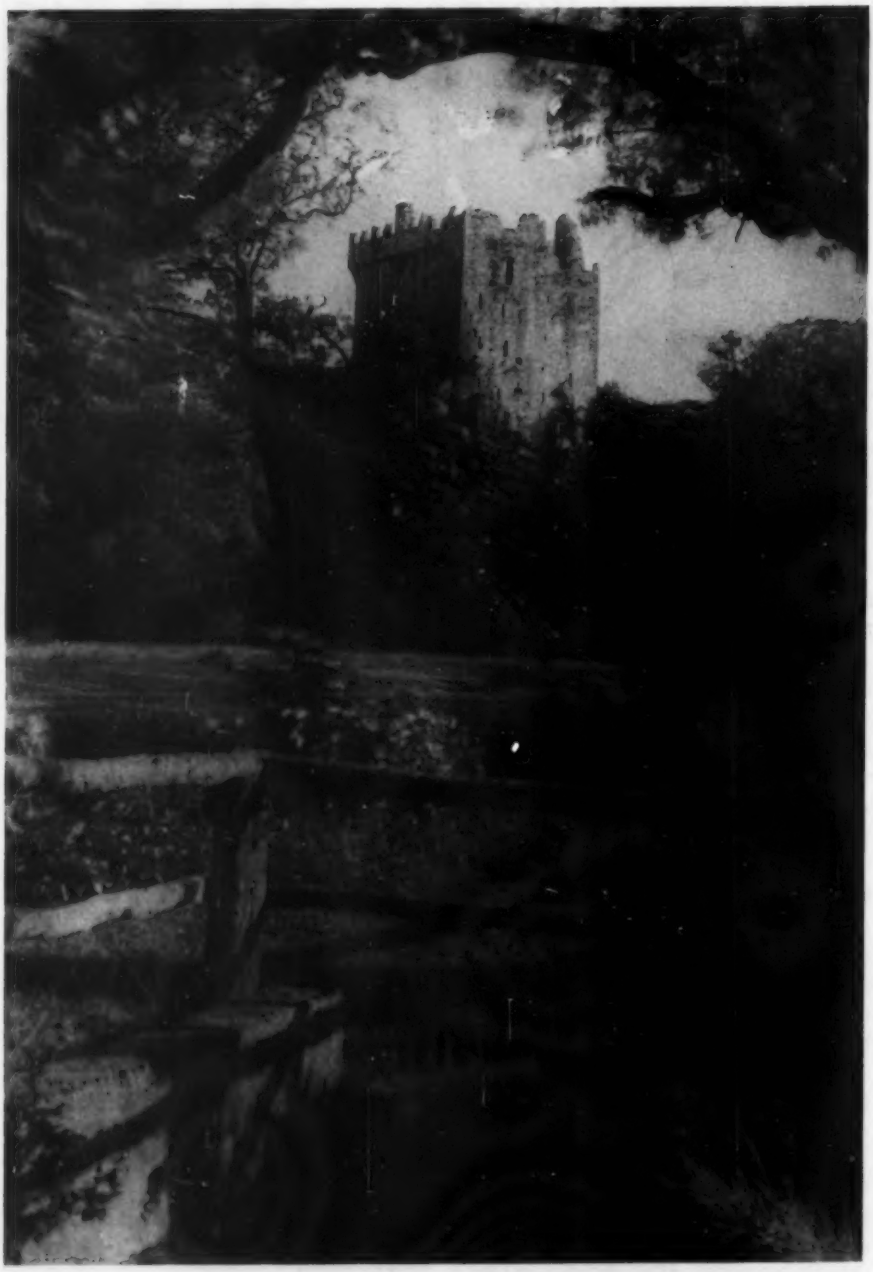
To the explorer, and particularly to the physiographer, Mackenzie mountains present, no doubt, the most interesting field in Canada that still remains to be investigated. Only two traverses across these mountains have ever been made and described: Joseph Keele's by way of Ross and Gravel rivers, and my own in 1905 by way of Stewart, Beaver, Wind, and Peel rivers. Exploration will prove to be a most arduous undertaking; the absence of landing places is a handicap to photography from the air, and the streams are not easily navigable even by canoe; but these difficulties merely make more formidable the challenge this mountainous region holds out to the explorer.

Geography of World Events

EGYPT

Egypt has been in the news of late because of the agitation there for release from British control. How far this agitation represents popular feeling, and the extent to which it has been fostered by Italians in Egypt, it is not possible to say. It may result in a better understanding between England and Egypt, or it may serve to complicate the already very involved situation in north-eastern Africa. British interest in Egypt dates back to the time of Napoleon, and increased steadily throughout the nineteenth century. Much of the credit for the development of the country in modern times is unquestionably due to the farsighted policy of British administrators. In the eighties that interest was extended south into the Sudan, and while Great Britain surrendered a few years ago, much of the control she had obtained over Egypt she maintains it over the Sudan. Reference to the accompanying map reveals a curious relationship between Egypt and the Sudan and their neighbours to the west and the east. On one side is Italian Libya; on the other Ethiopia, Italian Eritrea, and Italian Somaliland. Has it entered into the dreams of a modern Caesar, after conquering Ethiopia, to squeeze Egypt and the Sudan between these upper and lower millstones, and realize some day the vast ambition of a gigantic African empire?





Blarney Castle. One of the chieftains who lived here was perhaps responsible for giving the word "Blarney" to the English language. Queen Elizabeth, perplexed by his ready answers and his glibness, is reputed to have said "This is more Blarney."

Glendalough, the Glen of the Two Lakes. St. Kevin has probably the best-preserved collection of religious antiquities in Ireland, including a Round Tower and the famous Seven Churches. Seen from the slopes of its encircling mountains it seems a fairy glen — a mirage.

Riding About Ireland

By Anita Leslie

I HAD always had the idea of riding around Ireland on horseback, visiting historic places and keeping off the beaten track. In olden days travel was an adventure and I determined to see the country as a mediaeval wanderer might.

I had no fixed route but followed the coast southwards from Dublin stopping wherever fancy bade me. My mount was a stout little pony named Donagh. Ponies are stronger than big horses for this kind of work. He carried me and two small saddle bags (about 140 lbs) quite comfortably and seemed amused by the whole trip. Before leaving I got him in good condition and had him fitted with heavy road shoes to protect his feet from stones.

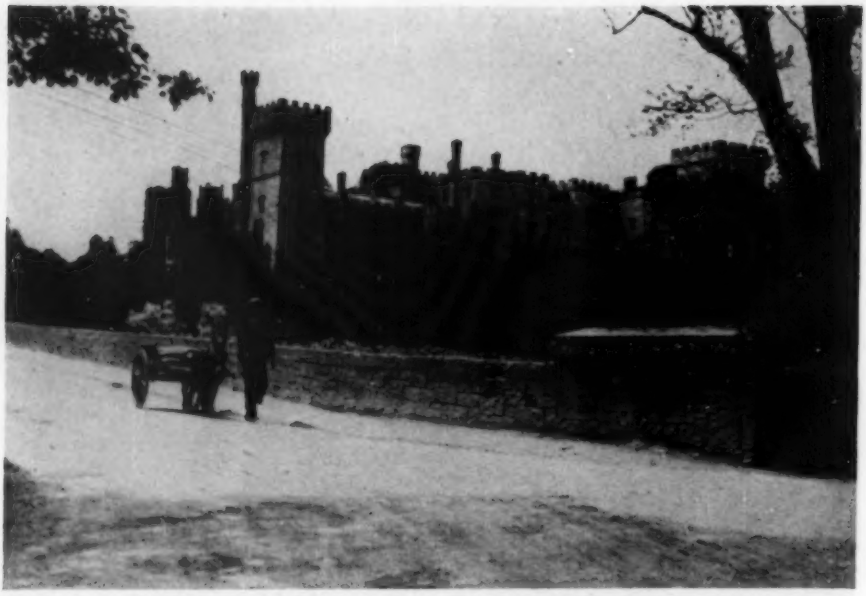
On a warm, July day I set forth from Chapelizod (this curious name means Chapel of Isolda, for Tristan's beloved prayed there when in Ireland). Skirting Dublin city, which gleamed in a silvery, summer mist, I rode off towards the lovely Wicklow hills. A mysterious building stood out bleakly on a mountain top. It was the remains of that famous Hell Fire Club where the bucks of Dublin used to retreat for gambling parties and cock fights.

Irish peasants know little and care less about their surrounding country. Go up to a cottage girl and ask the way to a village ten miles away:

"Agh sure, I don't know which road you'd take. I've never been there!" she answers cheerfully.

Small boys were garrulous and over helpful. A whole band would stop their games to give noisy instruction which invariably proved wrong.

Ireland is always seething with political factions. Instead of printing posters they send out men at night with a bucket of white paint and a brush to inscribe slogans on walls and hedges. In one place various rival parties had



Lismore Castle, founded 1185, passed in 1587 to Sir Walter Raleigh. On the shores of the Blackwater, one of the most famous salmon rivers in Ireland.

been busy writing their war cries in large letters across the road. Not content with mere advertisement they had worked one on top of another until an incomprehensible jumble remained.

I rode on past white washed cottages with thatched roofs, fairy tale windows and tiny gardens of brilliant flowers. Fat cattle grazed in the fields and young children in bright caps drove along goats and donkeys quite fearlessly. Irish children are extraordinarily efficient. One sees them doing grown-up jobs in every farm yard. They peer up shyly with beautiful eyes framed by incredible lashes.

Three carts drove beside me. They were returning from a horse fair. A new piebald trotted behind. It got loose. The fat, fat old lady directing the troop sent a mite of not more than six to catch it.

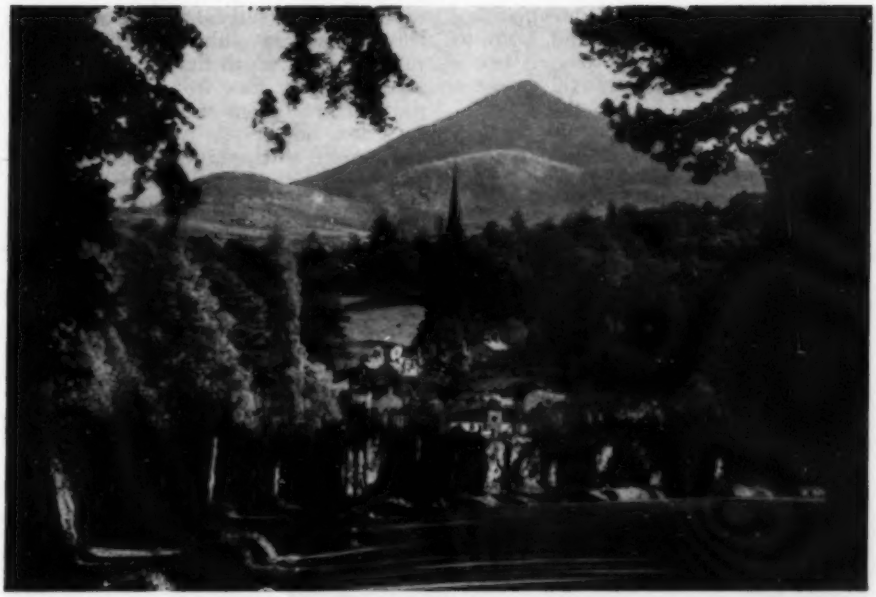
He did so but the horse got entangled in his leading rein and the child had to reach up and back the animal which towered above him. The whole family shouted advice but did not offer to help.

Sun and rain came in turn. A blue sea glittered far beneath and white clouds rode swiftly over the dark hills of Wicklow. Donagh plodded bravely up a long steep mountain road. I let him drink at a small brook overhung with fushia bushes. Their colour was dazzling.

The Great Sugar Loaf Mountain towered beside us and I remembered it was in those strangely shaped hills the ancient kings of Ireland mined their gold. Here a forgotten people had lived and worked. From here came warriors glittering collars and the beautifully wrought bracelets that caused jealousy among the queens. Lovely flowers decked the wayside. Their perfume filled the cool evening air. The mountain road was bordered by honeysuckle, morning glory and purple heather.

Dusk fell and I rode on through an enchanted land. At last the road wound down into a valley of daisy fields. I came to a small village. It was dark so I decided to spend the night there come what might.

Having seen Donagh comfortably installed I carried my saddlebags into the little inn. A supper of bacon and eggs and tea was produced and I was delighted to find a small ingenious



Wicklow has little to show more beautiful than Enniskerry, a snug glen nestling among the hills.

bathroom brightly painted by hand in numerous colours. Through the cracks in the floor I could see into the stables below where Donagh munched contentedly.

My bed had a straw mattress of questionable cleanliness but I was too tired to care. Next morning the whole village had heard of my venture. Everyone wished me luck as I rode off towards Glendalough, the "valley of the Two Lakes" where St Kevin founded a monastery in the 6th century.

Pine covered mountains towered each side and the sun beat down. We arrived at noon. While Donagh was being fed I explored the monastery remains and wished as one should while hugging the old cross. There are many legends about Glendalough. Across the lake is a cave in the rock where St Kevin lived in pious discomfort. He could not have found a more lovely spot to be holy in! The birds and beasts came to know him and the trees "spoke" as he passed by.

When I rode away past the ruins of the Seven Churches I understood why Thackeray wrote: "I do not know if there is any tune about Glendalough, but if there be it must be the most delicate, fantastic, fairy melody that ever was played."

Having followed the deep wooded Vale of Clara I was lured astray up a "mountain road" which was beautiful but long. The Great Sugar Loaf Mountain was now far in the distance. Before me stretched a wilderness of hills with green valleys at their feet.

I took a short cut across the heather. The descent was often rough and steep but Donagh never faltered. Having reached the valley I lost my way owing to a sign post which some Irish gentleman had bent backwards.

Fine black and white cattle grazed in the meadows. Following the stream I came to the Meeting of the Waters. There was the old barkless tree under which Tom Moore wrote his poems. Donagh ambled along the Vale of Avoca occasionally stopping to drink in the river. Presently we turned onto a rough road and headed for the sea. Each cottage had a little garden bright with nasturtiums and hollyhocks.

At a cross roads an old man directed me kindly:

"Take yon white road" he said pointing to several dusty tracks "and keep to your right a piece, then to your left a piece and then straight on till ye see a bridge and ye'll be nearly there."

I chanced it and suddenly the sea was spread before me. I looked down on the little town of Arklow with its old fishing fleet in the harbour.

Donagh and I were both tried after the long day over mountain and valley. While relaxing in a hot bath I was amused by a notice which forbade one to throw cigarette ends or matches into the tub!

Twelve hours later church bells awakened me. The cobbled street was thronged by churchgoers in their Sunday best.

I took the next days easily following the coast southwards through a country of fields and small hills. The surprising thing about travelling in Ireland is the rapidity with which the types of scenery change. One goes from mountains to flat pastures, from sea to inland plains in a few hours.

Rain fell softly as we approached the historic old town of Wexford . . . that peculiar Irish rain that is soft as mist. The valley widened and grew marshy. There was a grey, mysterious light over the river as evening fell. I put up at White's Hotel, more than a hundred years old. Next day I let Donagh rest and set out to explore the waterfront. I talked with the skipper of a three-masted schooner. He stood on deck and recounted his life gaily. His red, weather-beaten face crinkled into a grin and his blue eyes gleamed when I told him about my trip:

"What a grand thing to be sure" he complimented me "next time you want adventure come to sea in my ship . . . will ye do it?"

We parted with laughter.

Wexford was founded by the Danes in the ninth century. Their ghosts still walk in the narrow streets. I explored the ruins of St. Skelshar Abbey and learned that Henry II did his penance there after the murder of St. Thomas of Canterbury.

Most women in this part wear black shawls over their heads but near the old Norman Bull Ring I saw that sophistication had come to Wexford.

A young barelegged girl in a shapeless mackintosh was standing in the rain holding a broken mirror and carefully painting her lips!

Next day I set off through the famous

A mediaeval view — Mary Street and Friary, Wexford.

Waterford hunting country. I remembered my grandfather telling me that in the old days Lord Waterford never allowed port to be served at dinner unless a fox had been killed. Then the toast was invariably to the King and the Hounds!

There were many beautiful mares and foals in the fields. Riding through this rich pasture land divided by big banks and hedges one could understand how it is the world's greatest horses come from Ireland.

Donagh enjoying company put an ear foreward and answered many friendly neighs.

At Waterford town there were good stables to rest my companion in. One morning I set off on a jaunting car to see the surrounding beauties.

St. Finbar's Cathedral, Cork. On the site occupied by the original church of St. Finbar (6th century). Finbar founded Cork.

"Get on with ye Tipperary!" shouted my jolly old driver to his nag. "Sure you can see the blood in her?" he asked gleefully.

His inventive talk was most amusing. Every famous Irishman I mentioned he had known intimately. We passed Lord Robert's house: "A grand gentleman" he murmured "agh sue I knew the whole family well, his sisters and all!"

In a narrow road he blocked the way and stopped an approaching automobile. The man at the wheel seemed peevish.

My driver roared with laughter.

"Did you see that young fella' looking sour at me?" he asked, "He thought I was doing wrong . . . well, and maybe I was!"

He told a great tale of a man who, in days gone by had made him drive thirty miles in a day with every "pub" a winning post!"

"Did you enjoy the drive?" I asked.

"Agh sure I never touch the drink. That I promise! It's only the horse likes the smell of it."

Next day I rode westwards. Passing Dungarven Bay the road climbed upwards. It was hot and cattle stood cooling themselves in muddy ponds. One little donkey slept peacefully in the middle of the road.

Towards sunset we reached the summit and looked down on Youghal Bay with its little town which Dane and Norman and Spaniard had invaded in turn. Like Wexford it was once a walled city. Sir Walter Raleigh's house still stands in the garden where the planted Ireland's first potato. He owned much of the land around and loved his rural life there.

Waterford, industrialised and progressive, is still Waterford of the calm mediaeval age.

It was from Youghal the great adventurer sailed out to found Virginia.

That evening I strolled through the quaint old streets. It was hard to realize the Spanish fleet had sailed into that lovely harbour. It looked so peaceful with children playing on the sands . . . yet they were brown skinned and most of them had great dark southern eyes!

Next day I left for Cork. The road led through wide fields and marsh land. Grey herons flapped lazily through the mist.

As I approached Cork city the sun came out. Church spires and bridges glinted like silver while the river might have been a stream of diamonds.

I was anxious to push on to Kerry and the Atlantic. After a good meal we started off towards the far hills. The scenery grew steadily wilder. Hedges were replaced by stone walls and barren moorland stretches lay around. Huge clouds gathered over head. Mountains loomed nearer. The little thatched cottages grew less frequent and seemed to cling to the earth for protection.

At last on a soft rainy evening we reached Bantry. The bay looked forlorn and cold. The hills were hidden by white Atlantic mists. I found a clean little hotel and comfortable stables for Donagh.

Next morning an astonishing change had taken place. The bay glittered under a cloudless, blue sky and the great hills which had looked so drear the night before were bathed in sunshine.

I could hardly wait to be off. There lies an ancient bridle path over the mountains to Kenmare called the Priest's Leap Road. Several people told the tale. In olden times a priest chased by Cromwellian soldiers reached the mountain summit ten miles away in a state of collapse. His horse gave a terrific jump and landed outside Bantry. I passed the stone on which he landed. It was marked as by a whip and the horses knees.

For a time I followed the sea. Small bays ran in to a rocky shore. From the road one could see delicately coloured jellyfish floating in the clear water. Every cottage had a natural rock

Selskar Abbey, founded in the 12th century. Within its walls Henry II of England did penance in 1172 for the murder of Thomas à Becket.

garden. Occasionally one came to fine crops of oats growing right beside the sea. The air was salty until I turned along a rough track leading straight up into the mountains. Blue-eyed peasants waved and smiled as we went by. Having passed a few lonely cottages I went on higher and higher until we reached the summit where the priest did his "mighty lepe." A cross marked the place. The beauty of the view was indescribable. I dismounted, loosened the girth and sat gaping while Donagh nuzzled the heather.

Far below lay a green valley like a cut in the purple heathery hills. Cows crossing a stream looked like small dogs. I could see back over the whole way we had traversed. The sea glistened and Bantry was just hidden by a wood of firs.

It was easy to believe that a miracle could happen in such a place.

Donagh had a good drink, but I could not allow him to lie down and bathe in the stream as he wished. We went on to the other side of the mountain. Only from the wild tracks is it possible to realize the full beauty of the Irish hills.

After a cool mountain breeze the valleys seemed stifling. The flies were most irritating so we trotted on towards the sea. It was strange to be among fields and flowery hedges after the wild mountain bracken.

An old woman in a man's cap ran out from her cottage:

"Agh sure isn't it lovely to see you on the wee horse! Isn't it terrible nice!" She waved until I was out of sight.

The way to Kenmare had been steep and stony. When we arrived Donagh was weary so I sluiced her down with cold water and decided to rest a couple of days. It wasn't bad to be in a comfortable hotel again! There was a new country to explore. The valley gardens were full of palms and luxuriant tropical plants.

The sun continued to shine so I swam next day in the Kenmare River. It was very stony and the water was full of mud and jelly fish. I thought regretfully of the sandy bays around Bantry.

Ross Castle, Killarney. It was of this ancient fortress that Tennyson wrote "The splendour falls on castle walls, and snowy summits old in story."

Evening at Killarney. Hemmed in by forest-clad mountains, with three of the loveliest lakes in the world, Killarney's charm baffles description.

Macgillycuddy Reeks, County Kerry, part of the Kerry Mountains.

The rocky mountain paths had been hard on Donagh's feet. His shoes were worn thin so we went to the blacksmith. He was a great brawny fellow with a soot covered face and merry blue eyes. He loved horses like children and had learnt the trade from his grandfather.

Next day I rode on to Killarney. Luckily my pony had been reshod for the track was very rough. I kept the girths slack and let him cool his legs and drink in several mountain streams.

We came to the first of Killarney's lakes. A fantastic tangle of foliage covered the shore. One might have been in Africa!

It was hot. We walked slowly past the ruins of Muckross Abbey into the famous town. All stables were crowded. I had to wander through the crowded market and down lanes of pink and white washed cottages trying to find accommodation. At last Donagh was comfortably installed. I went off to explore the much-sung beauties of Killarney.

On my last evening friends invited me to row out to Innisfallen Island. It was dusk when we set out over the roughish water.

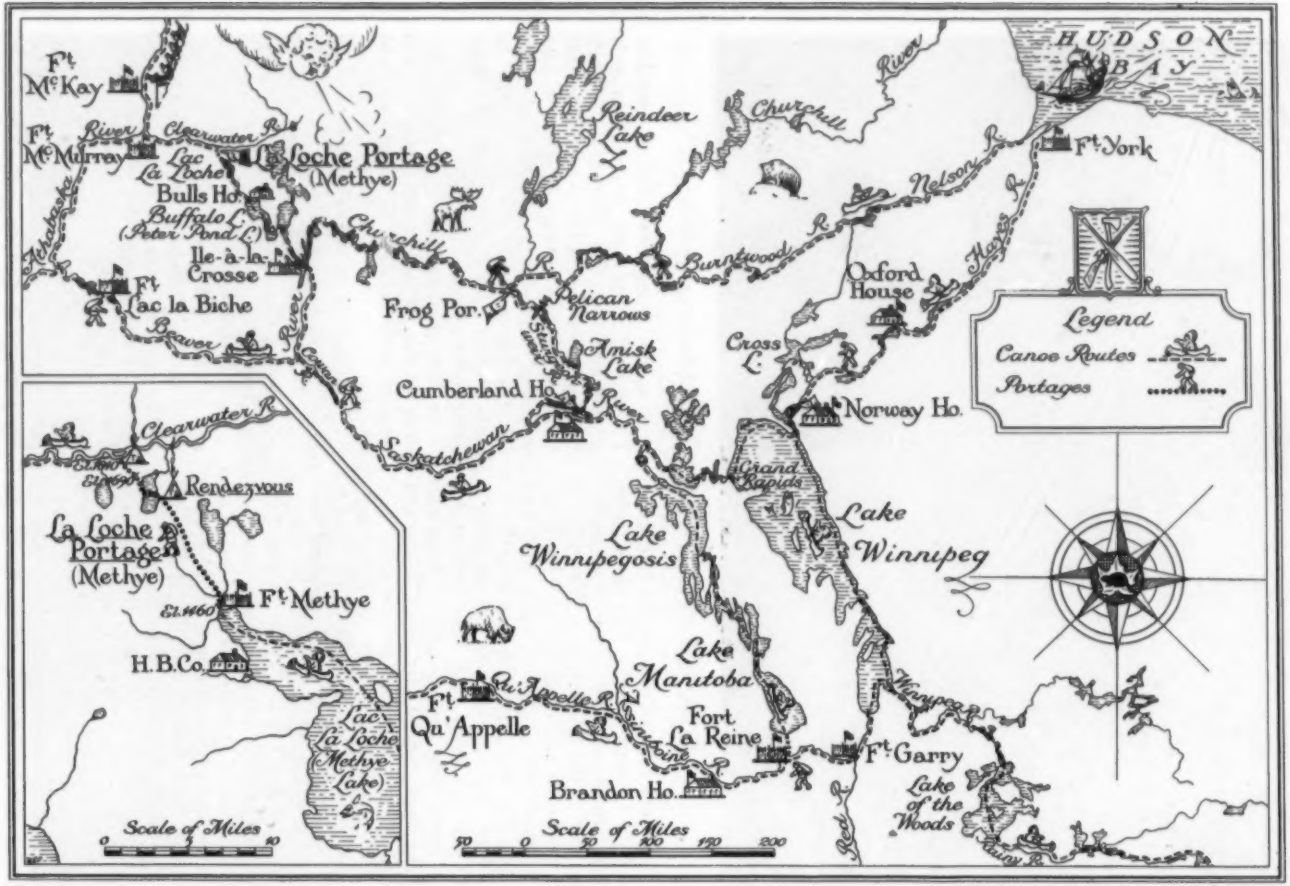
A storm hung over the mountains. The ruined monastery looked strangely mysterious in the darkness. When Englishmen were mud-covered barbarians this isle was a centre of culture and learning. Brian Boru came to Innisfallen for his education. The place was in ruins when the Normans built their castle on the mainland.

As we rowed back my companion sang beautiful Gaelic songs which blenden weirdly with the dark hills and threatening sky.

Next day I rode eastwards towards Dublin. The brown Kerry hills still rose beside me. Their tops gleamed silver when the sun slipped from behind the clouds.

On the other side of the road stretched an utterly different country of flat, fertile fields. It was a typical contrast.

The last day came. I was on the road at six. It was a beautiful fresh morning. I could still see the southern hills dark as velvet against the dawn-lit sky. Mist rose from the fields and melted into pale sunshine. Regretfully I realized my journey was at an end. That night Donagh slept in his own home stall in Dublin!



Map by W. F. Flood, Ottawa.

Portage La Loche

by S. C. Ells

Illustrations by the Author

SINCE the dawn of recorded history —and undoubtedly since much earlier times—mankind has worshipped power and fame and beauty. To this may be ascribed, among other things, the development and subsequent transitory fame of La Loche portage.[1] Down through the centuries of a dim and distant past these loadstones drew to themselves, over nameless trails, caravan routes and dimly charted sea lanes, a never-ceasing tribute of tears and gold and service. Successively the ruthless and blood-stained civilizations of the Sumarians, the Semites and the Assyrians, which rose and fell in the valleys of the Tigris and the Euphrates, gathered the tribute of distant lands. Thousands of years before the Christian era, when Egypt was the dominant power of the Mediterranean world, there had flowed into the valley of the Nile a ceaseless stream of gold and precious stones, of ivory and myrrh, of countless herds of cattle and of slaves. To Rome, at the zenith of her might and splendour, came silks from China, furs from Scythia, metals from Britain, rare woods from Africa—and a thousand luxuries to gratify the demands of her powerful and pampered rulers. Similarly, in the Orient, under the Tang, the Sung, and the Ming dynasties, far distant lands paid their tribute to the fame and power and beauty of ancient China.

Amid the frightful storms of Gothic wars, Rome fell; from the ruins of her vanished greatness arose the so-called Christian powers of western Europe. And with the discovery of a new continent beyond the Western Sea, still other tides of tribute commenced to flow toward established power. But through new channels—over primitive cart tracks, down winding shadowy trails, along mazy labyrinths of lake and river and lonely forest stream. From the struggling colonies of the middle and southern Atlantic seaboard, came indigo, tobacco and rice; from the vast and mysterious hinterland of the west and north, a seeming endless stream of furs.

Meanwhile from the bleak shores of Hudson's Bay and from the rude settlements along the St. Lawrence, exploration and barter were pushing further into the wilderness—hand in hand. From the meagre shelter of arduously built stockades on the shores of the Bay, the Gentlemen Adventurers followed great nameless rivers toward the south and southwest. From Quebec and Montreal, reckless and indomitable spirits of l'ancient régime pressed on toward the western plains, makers of history in the face of almost incredible hardship and danger in the Pays d'En Haut. A mighty chapter in the epic of Empire was being written with paddle, axe and gun.

By the middle of the 18th century, travel routes from the east and from the northeast had been established far

The trail winds upward through heavy timber, climbing approximately 550 feet within a mile.

to the west and north of Lake Winnipeg. But while the ruthless and relentless struggle between powerful rivals [2] for control of the fur trade of half a continent became ever more bitter—until the Selkrik grant hastened a bloody climax—the lure of a water route to the Pacific and to the far north still beckoned. Finally, in the early summer of 1778, Peter Pond, pathfinder, soldier of fortune and stormy petrel of stormy times, gazed eagerly north from the divide which marked the partings of the waters. Toward the south and east a thousand miles of lake and river led to the shores of Hudson's Bay. Toward the north and west stretched the great waterways of the Athabaska-Mackenzie system. At long last a man of the white race had crossed what was to become known as the La Loche portage. And over this portage for more than a century was to flow fabulous wealth—the wealth of the fur trade of the far north. Still another channel was to bear its tribute to distant power . . . and fame . . . and beauty!

* * *

La Loche portage leaves Clearwater river [3] at a point opposite a small island in a loop of the stream some 80 miles (by water) to the east of McMurray [4]. As a portage it differed only in degree from a score of other trails in northern and north-western Canada. True, its length of 12½ miles was somewhat unusual and the portage track itself—ultimately widened to accommodate wheeled traffic [5]—was wider and more carefully located than was customary. The difference in elevation—approximately 450 feet—between the northern and southern termini [6] was notable but was not unduly great. For the rest, it crosses a belt of typical northern terrain—rolling sand ridges, clothed with jack pine, spruce and poplar, and in the hollows small pools

and lakes, grassy sloughs and muskegs.

On leaving Clearwater river at the northern terminus, the trail crosses a heavily wooded river bottom intersected by a shallow brook, and at mile 0.5 (elevation 1050) the main ascent begins. In the next mile the trail winds upward through heavy timber, climbing approximately 600 feet (elevation 1650). From the rim of the valley wall a very gradual rise continues to the height of land (elevation 1690, mile 2.5). The trail then falls by easy gradients to a shallow basin, skirts the western and southern shores of a small shallow lake fringed by sandy beaches, and passes through an old and extensive camp ground (mile 4.2) at the point where it leaves the lake. [7] This was the meeting place for brigades from the north and from the south; [8] this the rendezvous at which precious bales of furs were exchanged for north-bound supplies; this the turning point at which hardy crews and stern masters bade each other a boisterous 'hail and farewell'—and "returned again, each man unto his own place."

A dangerous travelling companion met in the handling of heavy York boats. Here the turbulent rapids east and west of the Portage, called for superlative skill by bowsmen and helmsmen.

Brigades of York boats forged their foaming way up heavy currents and swirling water from distant York Factory.

From this point the trail resumes its winding course across the low rolling sandy ridges, crosses a low local summit (mile 6.2) and then gradually descends to its southern terminus near La Loche lake. Two and three quarter miles from the shore (mile 9.7) one catches the first glimpse of the lake, and at mile 12.0 its broad waters are in full view. The northern shore-line of La Loche lake is fringed by bedraggled muskeg and swamp and by occasional small patches of hay meadow. Through this low-lying land meanders a small and very crooked stream, varying in width from 15 to 30 feet, on the banks of which grassy clearances still mark the sites of two former camp grounds. The one, a few rods from the lake shore, was used during periods of low water and at one time was the site of Fort Methye Lake; [9] the other approximately one quarter mile further up stream, was used during periods of high water and here an

Ultimately the Portage was widened to accommodate Red River carts—the first type of wheeled vehicle used in the west.

important warehouse once stood. The location of the trail and general topographical features along its route are indicated on the accompanying map.

* * *

As suggested above, La Loche portage differed only in degree from half a score of other portages which existed during the same period in northwestern Canada. Why then during the early years of the 19th century did it achieve a fame equalled by few other carrying places on the North American continent? Moslems made the pilgrimage to the Qaabaat at Mecca and thereafter were revered and reverenced. Voyageurs crossed the La Loche portage and attained an enviable prestige among their fellows. Why?

The answer lies in the fact that, during a period of more than 100 years, the portage was the principal focal point of that far-flung stage on which was unfolded the stirring and intricate drama of the early fur trade in the far north. It was a drama intensely human, often involving issues of life or death; a drama of which the actors have long since vanished but of which the theme itself has yet to be adequately recorded. And indeed in these decadent days, when the staccato of the motor has replaced the swish of the paddle; when the aeroplane has annihilated time and space and driven hardship to the most remote places; when a standardized and mechanized system has reduced exploration and the fur trade itself almost to a prosaic routine, it is not easy to visualize clearly and correctly those scenes of less than a century ago.

Undoubtedly the character of the actors themselves was the keynote of the colourful drama of the Portage,—explained why the Portage became famous. For character has been not the least of the sacrifices that have been offered on the altar of our new and boasted "efficiency". Today, for a few weeks or months, men may perfunctorily follow the smoothly monotonous routine of river and trail—and turn with relief

In fair weather and in foul, the boat crews hurriedly cooked their rough fare along the open shore—where and when they could.

to the enervating comfort and tawdry tinsel of our so-called modern "civilization". But less than a century ago "trippers" and runners, Métis, Bois-Brûlés and Coureurs-des-bois were preeminently individualists who, almost to the point of fanaticism, took a deep pride in themselves and in their responsibilities. For they realized—albeit perhaps but dimly—that they had a definite part, however humble, in the march of epoch-making events. Thus through the long years, to its shadowed windings, La Loche drew the flower of a race of reckless, rollicking voyageurs unequalled in any other land. Masters of trackline, pole and paddle, with crimson kerchiefs bound about tanned brows, and clad in fringed and beaded buckskin with gaudy sashes about their waists, they manned the flotillas of heavily-laden canoes [10] from far off Montreal, the brigades of York boats [11] that forged their foaming way up swirling rapids from distant York Factory. Out of the vast solitudes of the misty north to meet the men from the east and south, came other craft laden with fur from seemingly inexhaustible game preserves and manned by copper-hued Indians of the northern tribes [12]. Bowsmen and steersmen—master craftsmen and heroes of unwritten sagas without end—directed and controlled individual boats and canoes. Hard-bitten traders and guides, steeped in the ways of the wilderness and in the devious code of the fur trade, assisted by junior clerks and aspiring apprentices, ruled all with a heavy hand. In fair weather and in foul for fifteen to eighteen hours a day, and frequently for months at a time, hardship and unremitting toil were the common lot of voyageurs by water and by land [13]. In the early days brigades of boats or canoes usually started about 2 a.m., short stops being made for breakfast at 8 a.m. and for lunch at 2 p.m. It was not unusual to travel until 10 or 11 p.m., when crews again cooked their food, when and where they could. At a given signal boat crews—

Site of old Fort Methye near La Loche Lake at the southern end of the Portage.

often to the number of 150 men—lined up to receive their rations. Sometimes these were issued twice each week to steersmen of individual boats; at other times they were weighed out on the bow of a supply boat each night. Rations consisted chiefly of pemmican [14], fish, tea, and during later years, a little flour and pork. Individual crews did their own cooking. At night the men [15], tormented in summer by innumerable flies, slept for a little in the scant shelter of forest or thicket. And far away, in the sheltered luxury of the Beaver Club in Montreal, with its lavish and open-handed hospitality, or amid the magnificance of Hudson's Bay House in London, small groups of men controlled the destinies of voyageur and trader. At their word a thousand paddles dipped in lake or stream; wintering partners set out for the wilderness, to face perhaps, amid hostile savages, madness or starvation through the long arctic night. For the Great White Father beyond the sea must have bear skins for his stalwart grenadiers; fame and beauty must wear the glossy spoils of a thousand trap lines. Through the long years this tribute flowed across La Loche portage.

But little by little the hoarse voice of steam transport was triumphantly drowning the songs of hardy voyageurs. In 1859 the steamer *Anson Northrop* began to ply on the Red River between Georgetown and Fort Garry. In October, 1862, the St. Paul and Pacific railway reached St. Paul, Minnesota, north bound passengers and freight being transported by coach and cart to Georgetown. In 1869 the steamer *Northcote*, operated by the Hudson's Bay Company, was placed in commission on the Saskatchewan, while in 1878 the steamers *Marquette* and *Alpha* began to ply on the Assiniboine river between Fort Garry and Fort Ellice.

In 1883 the main line of the Canadian Pacific railway reached Calgary, which at once became an important point of trans-shipment. From there ox-drawn and horse-drawn vehicles transported

A typical vista along the sandy trail.

Camp ground on Clearwater river at the northern end of La Loche Portage.

passengers and freight to Edmonton and Athabaska Landing [16], the gap between the latter settlement and McMurray being bridged by brigades of scows and later, in part, by steamer [17]. With the completion of the Hudson's Bay Company's Steamer *Grahame* [18] in 1884, the use of York boats between Smith portage and McMurray was discontinued. In 1886 the Hudson's Bay Company's steamer *Wrigley* was completed at Fort Smith, and made her first trip to Fort Simpson the same year and to Fort MacPherson in 1887. The days of the fur brigades had come to an end; another chapter in the history of the fur trade had been closed. At long last [19] the curtain had fallen on the La Loche Portage as an essential link in the transportation system of northwestern Canada.

John MacDonald, a veteran of the La Loche Portage, and a friend — also a follower of northern trails.

* * *

The writer has crossed La Loche portage a number of times during the past twenty-five years. But its glory has departed—only ghosts of the past still linger. Once stolid Indians and care-free Metis, Orkneymen and reckless descendents of Highlanders who fled from bloody Culloden field, performed prodigious feats of endurance through the long days and fought and rollicked and sang through the short nights. Now only an occasional ragged 'breed,' followed by his inevitable retinue of wretched starving dogs, slouches silently along.

The last occasion on which the writer crossed the Portage was in the late fall of 1935. Chill sobbing breath of oncoming winter stirred leafless branches; dead leaves eddied and rustled along the rutted and grass-grown way; marshalled hosts of grey geese, wearily winging toward the south, sent down a last farewell from lowering skies. From a point where the trail topped a desolate fire-swept ridge, one caught a last glimpse of the leaden grey waters of the lake—of a distant ragged sky-line of pointed northern spruce. Then the scene was blotted out by a bend in the winding trail.

FOOT NOTES

1. On maps and in published references, the portage and lake referred to in this article are variously named "La Loche" and "Methye". The latter name is derived from a Cree word, "Mihyey". Both "La Loche" and "Mihyey" signify the humble "tommycod."

2. Notably the Hudson's Bay Company, organized in 1670 and the North West Company ("Les Bourgeois de la Compagnie du Nord-Ouest") organized in 1783. The XY Company and certain free traders were minor rivals. The "Nor' Westers" were the first white traders in the Athabaska-Mackenzie valleys, being followed later by men of the Hudson's Bay Company. Prior to the Conquest —notably between the years 1540 and 1717—charters were granted to some 13 French fur trading organizations, the majority of which were subsequently merged (1719) in the Company of the Indies

3. Formerly variously known as 'Swan' or 'Pelican' river.

4. The first post was established in 1790 by the North West Company on west bank of Athabaska river and named Fort of the Forks. The Hudson's Bay Company took over the fort in 1821 and about 1875 the name was changed by Moberly to Fort McMurray in honour of a Hudson's Bay Company factor of that name About 1888-9, owing to scarcity of fur in its vicinity, McMurray became for a time an outpost of McKay (originally known as Old Red River Fort). Of the 5 rapids between McMurray and La Loche portage all except the Whitemud were run by the Fort boats.

5. For many years loads were taken across the portage by man packing. Eventually oxen and Red River carts carrying loads of approximately 800 pounds came into general use between La Loche Lake and the head of the main descent into Clearwater valley. Between this point — and the site of a large warehouse built on a grass-grown camp ground — and Clearwater river loads were drawn on stone boats by man power until the construction of a cart track by Moberly in 1875. Although doors of warehouses on La Loche Portage were unprotected by locks, stealing was unknown. Oxen were wintered at Bull's House—still a winter outpost—near the mouth of the La Loche river.

6. Elevation of La Loche lake 1460; elevation of Clearwater river at north end of portage, 1010; elevation of summit approximately 1690.

7. Indicated on accompanying map as "Rendezvous Camp".

8. Men from the north and south were referred to respectively as 'Mackenzie river men' and 'Oxford House men'.

9. Established by the Hudson's Bay Company about 1780 and also known as Portage La Loche Fort. Subsequently the North West Company also established a Post on the portage.

10. The bark canoes commonly employed as freighters had high picturesque bows and sterns. They were about 25 feet in length and carried crews of 8 or 9 men besides 2 or 3 passengers and 25 to 30 pieces of freight. Much larger canoes were used at times by the Nor' Westers.

11. 'York' boats, introduced by Sir George Simpson as cargo carriers, resembled whale boats. They were approximately 40 feet long, had a beam 11 feet and carried 110 "pieces" of 90 pounds each. They were propelled by oars, tracklines or sail and carried a crew of 8 besides bowsman and steersman. A brigade of boats or canoes was under the immediate supervision of a "guide."

12. Barley grown at Fort Liard, ground by hand, and made into soup, was used extensively by northern voyageurs. Owing to abundance of caribou and elk Fort Rae was an important centre for the preparation of pemmican.

13. On portages—good or bad—men were required to carry not less than two "pieces" of 90 pounds each. Members of crews of York boats were frequently assigned a definite weight—such as 1,000 pounds—for the portaging of which they were responsible. Voyageurs when engaged by the year were paid in "made beaver" or in goods to the value of £17 to £20. Frequently they were engaged on a 'trip' basis—so many 'beaver' between stated points. Steersman and bowsman were always engaged by the year.

14. Pemmican consisted of dried buffalo (in the south) or caribou or elk (in the north) pounded to a pulp and mixed with an equal weight of tallow. It was packed in bags of buffalo hide and the bags—each weighing approximately 90 pounds—securely sewed up.

15. A considerable number of passengers frequently travelled with brigades. They were given the same food as the crews and provided their own shelter at night. Company officials had canvas shelters either in the sterns of boats or ashore. The hurried manner in which cooking was done was responsible for many destructive forest fires. Ultimately in 1887, the Hudson's Bay Company introduced the use of a "cook" scow.

16. Now known as Athabaska.

17. The steamer *Midnight Sun* operated by the Northern Transportation Company, commenced to ply between Mirror Landing, Athabaska Landing and the head of Grand Rapids in 1907. Thereafter, scow transport between these points was largely discontinued. In October 1919, the Alberta and Great Waterways railway reached Cache 23, near Christina river and some 19 miles from McMurray by tote road and river.

18. The length of the *Grahame* was 135 feet and her beam 24 feet. Her engines (60-70 h.p.) gave her a speed up-stream of about 5½ miles per hour.

19. Actually about 1883.

Both sides of the trawler's deck are filled after a three-hour tow. The large cone in the foreground is the spare "dan."

Trawling in the North Atlantic

By WILLIAM J. DAVIDSON

HAVING sailed on various classes of ocean-going vessels, I signed on as a member of the crew of the steam trawler *Good Hope*, bound for fishing grounds somewhere in the northern waters of the Atlantic Ocean to the southwest of Iceland.

My new berth was a trim little ship of 500 tons gross, and manned by a crew of thirteen. She had just been overhauled and refitted to explore for new fishing grounds in the North Atlantic.

Our sailing orders were posted for March 4, 1927 at high water which was 9 a.m. A few minutes after the posted time our little vessel was moving away from her berth with her bow headed for the great open wastes of water. During the outward-bound voyage which took us five days steaming at a steady ten knots in beautiful calm weather, the crew were engaged repairing nets and getting everything in readiness to commence fishing immediately we should strike suitable fishing grounds.

The morning of the fifth day broke clear and with the wind shifting around to due west and backing considerably, at five a.m. our ship was brought to a stop and the sounding line was lowered overboard by four members of the crew. This line consists of stranded steel wire with a heavy lead weight on the end, the lead itself weighing about fifty pounds. Preparatory to being lowered overboard the bottom of the lead is giving a heavy coat of thick grease. As the line ran out the *Good Hope* rolled lazily in the heavy Atlantic swell which was running from the west. The sounding line having reached bottom

A pig fish and large lump of coral brought up in the trawl from deep water south-west of Iceland.

the mate reported 320 fathoms. On the lead coming aboard the grease was covered with a coating of white sand.

Our engine-room telegraph rang to "Full ahead" from the bridge and we steamed ten miles due north where we stopped again and another sounding was taken. This time the lead showed 360 fathoms and small gravel bottom. Our ship was then swung around with her bow due south, as the skipper ordered starboard gear which meant we would be using the starboard-trawl.

The crew quickly unlashed the huge net, and the heavy "doors" which sink the trawl to the ocean bed were attached to the winch cables, then the two ends or wings of the net were made fast to the doors. The trawl was then heaved overboard, the wings first and the bag which is the heavy centre part of the net last. It opened out floating on the surface of the sea in the shape of a new moon. As the ship begins to pick up speed the doors are dropped overboard and the brakes eased off the winches.

The heavy two-inch steel hawsers pay out from the drums very quickly as the trawl sinks to the bed of the ocean. To allow a trawl to travel along the ocean bed at fishing speed, it is necessary to run out the cables to three times the depth recorded by the sounding line. In this instance about one thousand fathoms were run off the winch drums, then the breaks were applied tightly as our ship moved along at a steady trawling speed of five knots.

All hands then set about preparing the fish-hold to receive the catch when the trawl would be heaved aboard again. We had shipped 225 tons of ice and this had to be broken up and spread to a depth of about two feet on the bottom of each section of the fish-hold. Two hours passed in this manner and then the order to "Stand by for hauling." The men donned their sou'westers and oil-skin suits and pulled up their hip boots full length and after a visit to the galley for a hot cup of coffee they were ready to handle the trawl.

The winches began to turn over slowly as they took the strain of the huge trawl far below on the ocean bed. As the ship rolled in the heavy swell away from the hawsers the winches would groan and stop, only to race away again as we rolled back over to the trawling side, when they would slow down with many creaks and groans as the extra strain of the ship's movement counteracted them again. The ship was then brought around so that the trawl was broadside to it and on our weather side.

The gulls, ever ready for an easily earned feed and well accustomed to trawling procedure, appeared on the scene by the score as the trawl neared the surface. They were of many different varieties and, using the names sea-folk know them by, the majority were "Kitties", "Mollies" also known as "Fishermen's Souls", "Blackheads", "Herrings" and beautiful diving Gannets. By ornithologists the latter are sometimes called Solan or Mediterranean Geese. They have an exceptionally powerful and razor-like bill and a long neck and when feeding circle around

about forty to sixty feet above the surface of the sea. Suddenly, on sighting a fish, they dive at terrific speed, entering the water with hardly a splash and never failing to "get their man."

They are voracious feeders, swallowing the fish whole, head first, and often become so gorged that they are unable to rise from the water. It has often been known of a Gannet to eat eight large herrings one after the other and still be on the wing diving for more.

This shark which came up in the trawl weighed over 2½ tons.

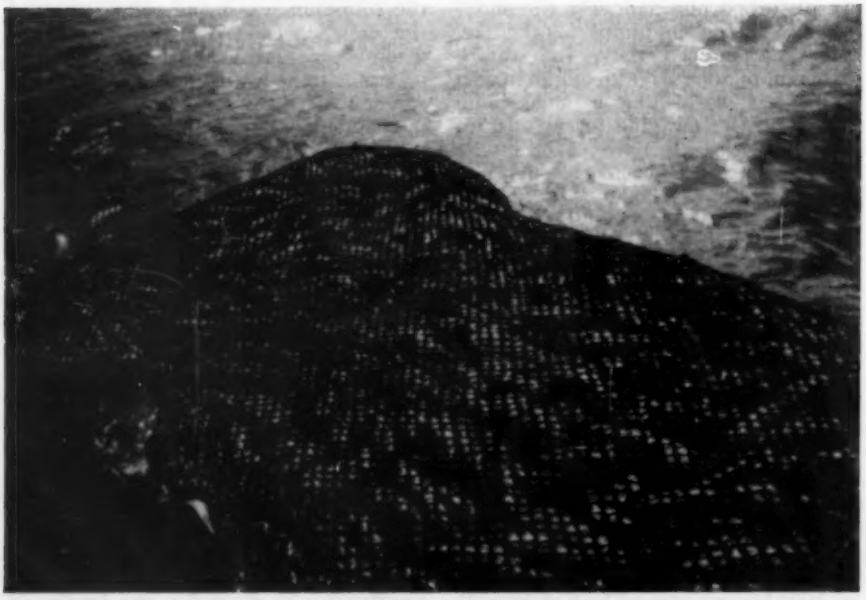
The trawl was gradually nearing the surface of the ocean as fathom after fathom of hawser was being wound on the winch drums, and finally the "doors" scraped against the ship's side accompanied by shouts from the crew of "She's coming." The water became very disturbed and suddenly the shout went up, "There she jumps" as the bag, bottom up, popped above the surface to a height of about eight feet and looked for all the world like a huge plum pudding. After swaying for an instant in that position, it rolled over on its side and flattened out like a pontoon floating on the surface of the ocean. The crew lined along the ship's rail and started heaving in the wings, removing the fish that had become caught by the gills in that part of the net and throwing them on the deck. When the wings were hauled aboard the bag with the catch was floating alongside and after a rope was tied around the neck of the bag, it was hauled aboard by means of a steam winch. After it was swung inboard and lowered to within a few feet of the deck, the mate scrambled underneath with the water pouring on him like miniature cloud-bursts to untie the knot. With a quick jerk and a jump the bag flew open and immediately the deck became strewn knee-deep with slimy gasping fish. This catch consisted mainly of large hake, halibut, bream and a few large cod.

As it was new hake grounds that we were in search of the sounding was again taken and showed to be 280 fathoms with pebble bottom. While the sounding was being taken some of the crew checked over the trawl and wherever a small hole or rip was found, it was stitched with net twine and a wooden "needle." Everything was again in readiness; the weather had begun to freshen and spray was flying across our decks. The skipper decided to put out a dan or marker which consisted of a long wooden pole with a wooden cone at its centre, a small light and a flag at the top end and enough cable with an anchor attached to reach the ocean bed at the lower end. This was quickly made and dropped overboard and we steamed away from it to a distance of approximatively 300 yards. The last tow was from north to south but this time we were to steam for one hour west, one hour south and then return to the dan. The trawl was got out and as the wind and sea freshened from the west, our towing speed was increased so that the trawl would not lay down on the ocean bed. After another trip to the galley the crew went for'ard to the fish pound to set about

Our cook produces the ever-popular tea kettle before hauling time.

cleaning and stowing away the fish. They took up their positions, two in the after end, two in the centre and the mate and bo'sun for'ard.

They commenced to clean the fish and as they cleaned them they threw them over to the opposite side of the ship to be washed. It is most remarkable how quickly these men can clean fish, and as well as being quickly carried out the work is done very efficiently. After about an hour and a half they were standing in a mass of blood and fish guts and the catch was all ready to be washed. Heavy seas had begun to break over us with the wind still increasing in velocity as the large hose was connected up for washing and each fish was washed individually inside and out. The large hake were then picked out and counted into boxes at twenty to the box. Intermediate sizes came next at one basket to the box and finally the babies at two or three baskets to the box. Each variety of fish was sorted and counted in the same manner and all were lowered into the hold and stored away on ice. A layer of ice from six to



Like a giant silver-mesh, the "bag" brought alongside full of hake and cod before being hauled aboard.

The "bag" has just been untied, dropping a nice haul of hake on deck.

ten inches thick was spread over each shelf of fish until the end of the voyage. The fish, on being landed at the quay, would be auctioned by the box, each box weighing 140 pounds.

The time then came round for hauling in the trawl again and after the usual visit to the galley the crew set to work. The same procedure had to be gone through again, only this time under more trying conditions. The sky overhead was thickly overcast with wet snow driven before a strong wind which had veered slightly to the north-west. The decks were visible for only short intervals as the *Good Hope* rolled and pitched with tons of solid green walls of water breaking over her. The winches kept stopping and then suddenly racing as the ship rolled away from and toward the trawl and their creaks and groans were supplemented by the rattle and clatter of gear and tackle in various parts of the ship. After thirty minutes of hauling we pulled round so that the trawl would come alongside on our weather side and thirty minutes later the doors came aboard. The heavy

A 290-lb. halibut caught in 300 fathoms of water off the coast of Greenland near Cape Brewster.

Hake lying in the fish pound, ready for cleaning. The for'ard door and cables can be seen as we are "shooting" the trawl again.

seas which continually crashed aboard, sweeping over the decks into the ocean again on our lee side completely obliterated at intervals the view of the men stationed along the ship's side waiting for an opportunity to haul in the wings. The sea birds seemed to be the only living creatures on that vast stretch of water who enjoyed the fury of the elements, and they were circling, diving and screaming mostly in the vicinity of where the bag would appear. At last, amidst shouts of "There she jumps", it broke to the surface and the arduous task of hauling in the wings was begun. At one instant it would seem as if the whole trawl would be washed aboard and at the next as we rolled away from it the men had to hold on like grim death to prevent the part that they had got aboard from being pulled back into the sea again. An hour was spent struggling with the wings before the bag finally came alongside, and then only with great difficulty was it hauled aboard. This time when the mate opened the bag a huge rock dropped out and joined with the loose gear on deck in crashing back and forth in time with the rolling of the ship. There were very few fish as the bag had been badly damaged by the rock and the wings had been torn and ripped too.

So the port trawl was unlashed and preparations were made to make another tow. The ship was swung around with her port side to the weather and as the trawl was pushed overboard, a wave lifted it and dropped it back on deck again. Finally after seven attempts the trawl was cleared and we got under way again but this time in a northerly direction from our dan.

The wind by now had reached gale force and was blowing out of the west again causing mountainous seas to hit us broadside on; the rolling and pitching were making life very uncomfortable for everyone aboard. The small catch from our last trawl was being cleaned and sorted. Several baskets were swept right over the side and others were buffeted to and fro across the deck as the crew struggled to get them below. That job being accomplished, they spread out

Some of the high diving gannets occasionally get caught up in the trawl and are hauled aboard.

the torn trawl along the deck and commenced to repair it with the water up to their knees as the scuppers could not take away the seas as fast as they were coming aboard. With the violent lurchings of the ship and waves constantly pounding them, it was almost impossible for the crew to work on deck, and it certainly was very hazardous. The stout little ship ploughed along with her huge load of cable and trawl on the ocean bed, and the waves rising to a height of sixty feet, huge walls of green water, were beautiful and awe-inspiring in their immensity. As the trawl came up we swung around broadside to the sea with it on our weather side and our decks were awash each time we rolled into an oncoming wave. After being heaved alongside and swung inboard, the bag again fulfilled our highest expectations for although the catch was a mixed one, the majority were hake the best of which weighed from thirty to forty pounds. There were also a few stray "dogs", a nice showing of ling, cod, halibut, "coalies", "dabs", bream, and catfish and some very large "monkfish" perhaps better known as "angler fish." Altogether after this haul we put one hundred and twenty boxes of 1680 pounds of fish below. Every member of the crew was in high spirits as the pay at the end of the voyage on these trawlers depends on the catch and of course, the bigger the catch, the bigger the pay. Preparations were made to get the trawl out again as the sky cleared with patches of deep blue and the wind still increasing. We commenced towing in a northerly direction from our dan, the steadily increasing sea hitting us almost broadside on. The crew cleaning and sorting the last catch in the fish pound in the same speedy manner paid no heed to the relentless sea as it swept across the deck, drenching them from head to foot as it passed and carrying with it the fish waste into the scuppers and through them into the wild waste of water where it was snatched up by the ever hungry, watchful gulls. It came around to hauling time again. The wind howled fiercely through our rigging almost drowning the noise of the

These husky trawler hands might be a good advertisement of the benefits of eating more fish.

winches. When the doors came up and were hauled aboard, the bag could only be seen at intervals in the rising and falling sea. With extreme difficulty the bag was swung inboard with a very disappointing catch, only a small collection of mixed fish, two sharks, three large rocks and not a single hake.

The weather conditions being now beyond fishing, we lashed our trawls alongside and commenced to dodge towards the lonely island of St. Kildas. For two full days we steamed at half speed with seas breaking over us and washing everything that was possible overboard. We sighted St. Kildas at day-break on the morning of the third day, and soon were anchored in that little bay, which has always been a haven to the fishermen of the North Atlantic in stormy weather.

The gale was still raging, and seas could be seen breaking 300 feet high against the rugged cliffs of this lonely island. On the morning of the third day at anchor, the gale started to drop although the seas were still raging mountainous high. Our anchor chain started to pull its great weight from the ocean bed, and we commenced to steam out towards the raging seas, this time homeward bound with our total fish aboard amounting to 750 boxes, nearly 400 boxes of hake alone.

Mackenzie surveys the Arctic Ocean

Reproduced from C. W. Jefferys' "Canada's Past in Pictures" by courtesy of the Artist and Ryerson Press.

GREAT MOMENTS IN CANADIAN EXPLORATION

VII. Mackenzie at the Arctic

In June, 1793, Alexander Mackenzie left Fort Chipewyan, on Lake Athabaska, with a small party of voyageurs and Indians, determined to find a water route to the sea. His way lay north by Slave River to Great Slave Lake, at the western end of which he paddled out upon the surface of a great unknown waterway which he hoped would lead him to the Pacific, but which ultimately took him to the Arctic. He called it the River of Disappointment; others afterwards named it the Mackenzie. He reached the delta of the river in July, and had evidence that he had come to the sea on the 13th, when he records in his journal: "We had no sooner retired to rest last night, if I may use that expression in a country where the sun never sinks beneath the horizon, than some of the people were obliged to rise and remove the baggage, on account of the rising of the water." The next day whales were seen off the mouth of the river. Before starting on the long and toilsome journey upstream, Mackenzie marked his farthest point to the north: "This morning I ordered a post to be erected close to our tents, on which I engraved the latitude of the place, my own name, the number of persons which I had with me, and the time we remained there." The post probably was before long put to other uses by the Eskimo, to whom wood of any sort is a valuable commodity. In such characteristically simple words the explorer recorded the completion of one of the momentous journeys in the history of Canadian exploration.

Idlers lounge in the fragrant atmosphere of public gardens. This park is a rendezvous of bird-fanciers who gather here for their far-famed warbling competitions. Strong Chinese tea and watermelon-seeds are served at the little refreshment tables.

Wedding processions pass through the street of a Chinese city with the clamour of spirit-expelling drums and the clash of riotous colours. The bride is borne in a gaudily embroidered palanquin to the home of her unknown husband.

Tsinan, a Chinese City

By Ronald A. Keith

WITH its origins hidden in the night of time, Tsinan has seen forty centuries of history and is today the capital of one of China's most populous provinces, with all the fascination of a cross-roads metropolis.

According to legend, the Emperor Shun ploughed over the site of the present city in two thousand B.C. Shortly afterwards the kingdom of Tan was established around the artesian wells which still bubble up in the centre of the city. In the fourth century A.D. Tsinan, the capital of a little kingdom twenty-five miles to the east, was moved to the present site because of the unfailing water supply. Late in the thirteenth century the Venetian traveller, Marco Polo, visited the mile-square walled city to witness a furious siege and capture, by enemies of the Grand Khan. In 1371 the wall was strenghtened with brick and stone and has remained practically unchanged until this day.

Modern Tsinan lies at the base of the great northern plain extending from the ridge of hills immediately south of the city to the Great Wall. A hundred miles inland from the Yellow Sea, in western Shantung, it maintains contact with outside by water and land. Five miles north of the city the muddy Yellow River swirls seaward, carrying heavily laden rafts and flat-bottomed junks. The water from the 'hundred springs' within the old city wall pours into a canal emptying into the Gulf of Chili a hundred miles to the north-east. Long, narrow boats are poled up the canal with provisions from the countryside and with Korean lumber for coffins. South of the Yellow River bridge and a short distance north of the west suburb is the cross-roads of two of the greatest travel routes in the Far East, the inland trade route from the Shantung coast, and the Imperial mail route between north and south China. A

Nothing is of intrinsic value in this open-air market in Tsinan. By common consent, vendors congregate with their stock of junk slung over the shoulder. When it is spread out for inspection, the stock-in-trade entices the wondering Chinese. Old tea-pots, broken cups, locks without keys, lonely shoes, etc.—Anything from the marvelous Occident attracts the eye of the naive shopper.

short distance west of the city the Grand Canal, highway of the Tartar Empire, still carries its traffic of primitive junks and goat-skin sampans. But the trade routes and the Grand Canal are antiquated by the up-to-date Shantung and Peking-Pukow railways connecting Tsinan with Chifu on the China Sea, Peiping, the centre of Chinese culture, and Nanking, the new capital in the south.

In the city of today the new intrudes but the old prevails. Sprawling suburbs have attached themselves to three sides of the old city wall. West of the south suburb an unwalled settlement has sprung up with wide streets, smart shops, and modern factories. A two million dollar water system is being installed with pipelines intersecting the area of the artesian wells. Outside the south wall a modern university applies the acids of scientific thought to the bonds of Confucian tradition. But these 'impudent innovations' have had little effect on the lives of the people. The unchanged East persists. Central city and suburbs are criss-crossed with narrow cobbled streets as dirty and uneven as they were when Marco Polo walked them. The houses of the inhabitants are the little huts of mud and straw that prevailed in the Tan kingdom. Rickshas, donkey-carts, wheelbarrows, and carrying poles are still the only practical methods of transportation in the crowded streets. The masses of the people living in their mud-brown shanties buy fruit and vegetables from vendors who walk the streets with their wares in baskets on the ends of carrying poles, and get boiled water in black kettles from sooty little shops with clay stoves. The coolie population lives on the streets and feeds in open restaurants on 'cart-wheel' biscuits and greasy meat-dumplings. The manufacturing is done in little family establishments opening on the street where juvenile apprentices slave from early dawn until long into the night, eating at their work and sleeping on mud bunks in the corners of the workshops. Elaborate funeral processions passing through the streets,

carefully attended ancestral plots outside the wall, and spirit screens before the doorways of the houses, testify to the unshaken belief of the common people in the Confucian doctrine of 'filial piety' and the reality of the spirit world.

Tsinan is one of the most densely populated cities in the world. Within its limestone walls nearly half a million people live and struggle for an existence. There are here no less than fifty thousand individuals per square mile as compared with sixteen thousand in Toronto, eighteen thousand in New York, and twelve thousand in London. Of these half million people, a relatively insignificant number live in economic security. These are government officials, factory owners, and more prosperous merchants. The masses of the people must live from day to day on the few uncertain coppers that reward their ceaseless labours.

In the markets of Tsinan itinerant barbers set up shop in the open with razor, stool and towel for equipment. With fearsome dexterity these street-barbers wield their straight-edge implements.

Of the working class the merchants form the largest and, as a rule, the most fortunate group. Ranging all the way from shop owners to street vendors, they include the numberless proprietors of market-stalls, restaurants, and hot-water shops. Nothing is sold at a fixed price in the markets and smaller shops, but proprietor and prospective purchaser bargain until a compromise is reached with a price which is a 'sacrifice' for the one and a 'robbery' for the other, but a secret source of self-congratulation to both. The hot-water shops do a thriving business for everyone drinks boiling water in China, cold water being considered 'dead' and thus a source of illness. Thrifty housewives send one of the children with a few coppers for a kettle of water, to be returned when empty. Everywhere about the streets are the itinerant vendors with their wares in flat baskets hanging from carrying poles balanced on the shoulder. These vendors may sell anything from persimmons to peanuts, but each has a distinctive cry or noise which can be heard and distinguished for blocks. Thus the vendor of chestnuts may beat a hollowed piece of wood with a stick, keeping a certain rhythm to be distinguished from the 'trade-noise' of the

In the mountains immediately south of Tsinan centuries-old caves dominated by rock-hewn idols, testify to the abiding influence of Buddhism in inland China.

candied-fruit man. The dealer in metal instruments has a brass bead swinging on a chain between two gongs which it strikes alternately with the roll of his walk. Some of the noises are most ingenious. The heavy water-barrows have wooden axles which squeak when greased and can be heard for long distances. Other barrows have little bells sliding on the spokes and jangling with the turn of the wheel. In many cases the distinctive songs, cries, or noises advertising the various wares have been passed down with the trade from one generation to the next until they have become as firmly established as a familiar trademark in the west.

The restaurants are always busy places. Ricksha boys and barrow-man pause after a long haul for a steaming bowl of soup or a spongy roll of steamed bread. The Chinese eat two regular meals a day, one late in the morning, the other early in the evening. At these times the restaurants do a rushing business. Small boys pump furiously at the ingenious double-action wooden-box bellows which keep the fires roaring under the greasy griddles. In the larger establishments a staff is kept busy stirring hot soup in hemispherical containers, rolling dough for meat-dumplings, pouring batter into deep fat or onto enormous griddles for over-size shapeless doughnuts, or cart-wheel, inch-thick biscuits. The coolies require slow-digesting food to last them over long intervals between meals, and like a generous coating of grease to 'lubricate' dry biscuits and dumplings. For the well-to-do there are exclusive cafes where rare delicacies are served at exorbitant prices. Here one may order shark's fin or bird's nest soup, ancient eggs, yellow tea, and watermelon seeds.

Perhaps the most notable evidence of the 'living middle ages' is the prevalence of small-scale family factories with primitive implements and methods dating back to earliest times. Each trade is rigidly controlled by guilds and very often is localized in a certain street. Thus there is 'bird cage street' lined with open shops devoted to the manufacture of nothing else but wicker cages for the pet birds of the more leisurely citizens, who delight in the warbling competitions spontaneously organized

For centuries China's travelling salesmen have carried their shops on their shoulders in the form of baskets swung from the carrying-pole. In the background is seen one of the modern shops which are springing up in the new section of the city.

in the parks and on the city wall where loiterers congregate.

On 'scissor street' the blacksmith guild is located. With amazing dexterity the toiling 'smithies' in their smoky huts work red-hot metals to produce an infinite variety of useful implements. The carpenters are specialists, coffin-makers, furniture-carvers, and manufacturers of wooden bellows, each in a class by themselves. There is always a demand for coffins in a city of half a million where overwork, under-nourishment, and unchecked disease co-operate with old-age and despondency to provide patrons. Enormous logs imported from Korea are sawn into slabs, rudely fashioned and nailed or glued together to form the heavy casket carried on the shoulders of coolies in the funeral procession. The wooden bellows used in every home and shop is a tribute to Chinese ingenuity. Simple and effective, it consists of an elongated, air-tight box into which is fitted a wooden piston padded with feathers around the edges. In each end of the box is a small aperture with a hinged flap on the inside. As the piston is pushed forward the flap closes over the aperture and the air is forced down a tube leading to the fire. With the recovery, the action is repeated in the near end of the box, thus giving the effect of a double-action pneumatic pump. This, like many other such devices used in the home industries, anticipated by centuries 'modern' inventions of the west.

Most of the able-bodied young men of the working class who are not employed in shop or factory, either pull rickshas or push barrows. There are so many rickshas on the streets that a visitor's first impression is that half the population of the city pull while the other half ride. As a result the competition is fierce and the prices are low. A foreigner is considered an easy mark and must pay about twenty cents (six cents in Canadian money) for a ride of some distance. The Chinese who can afford to ride pay no more than five cents a mile. The pullers have a comparatively easy life most of the time, dozing in their rickshas when business is slack. But they are often called upon to run for long distances and when competition is keen the receipts are

sometimes nil which means that they must go hungry.

The barrow-men are the most heavily-burdened of all workers. They do the work of trucks and horses. Some wheel their heavy wooden barrows for miles out into the country to load up with slabs of rocks at the quarries and struggle back over uneven paths into the city. Others operate between the Yellow River junks and the city markets making the double trip of ten miles over dusty, rutted roads. The cumbersome barrows are difficult to balance with heavy loads piled high on either side of the central wooden wheel, but there are few spills. A wide strap fastened to either handle of the barrow runs over the shoulder of the coolie to take the load off the arms and very often small boys, or even donkeys and oxen pull on long two-ropes to assist the 'pusher'.

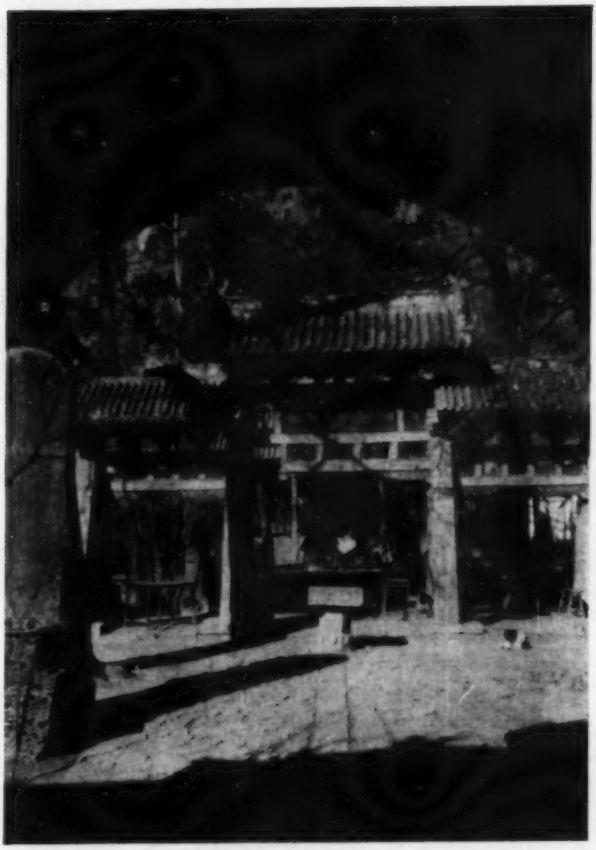
As might be expected in a great overcrowded city, beggars are numerous. Wizened old women kneel on the street corners with outstretched hands and pitiful appeals; ragged little urchins run after rickshas, begging to be thrown a few coppers; old men and cripples kowtow in the market places and display their ills. Many of the beggars exact a toll from the shop-keepers, calling at regular intervals for a 'handout.' Very often if a shopkeeper fails to respond, the beggars' guild will convince him that it is more blessed to give by detailing a dozen of their number to sit on his doorstep as a deterrent to prospective customers until he decides to donate.

This old man combines the offices of priest and care-taker in the Lung Dung Temple in the neighbourhood of Tsinan. His crude dwelling is set in the side of a mountain.

Some of the more successful professional beggars become quite prosperous in their trade and, on rare occasion, even rise to positions of social prestige. Only recently in a village west of the city a large celebration was held in honour of the 'righteous beggar of Linchin' who attracted nation-wide attention by founding the first modern educational institution in the district with his life savings.

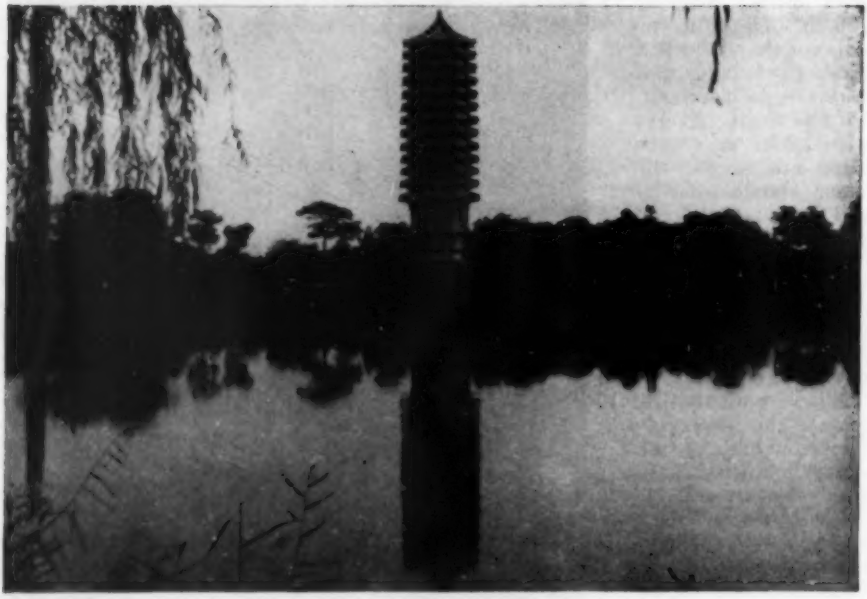
The religious beliefs and practices of the common people arise from a curious combination of Taoist superstition, Buddhist idolatry, and Confucian tradition. Animism, the earliest form of primeval superstition in China, is today the major premise and the dominating feature of

the entire religious system. The 'Tao' or order of the world is a balance of light and darkness, good and evil, life and death. Everywhere and in everything are spirits, the 'shen' (good spirits) and the 'kwei' (evil spirits) proceeding from the 'Yang' (heaven) and 'Yin' (earth), and corresponding to the angelic and satanic legions of mediaevalChristianity. Trees, mountains, lakes, the heavenly bodies, and indeed all natural objects have resident spirits. Man himself has a 'shen' and a 'kwei' stimulating his nobler and his baser impulses respectively. When man dies, his good spirit returns to heaven and his evil spirit to the earth. It is in the interests of everyone to stimulate the activity of the 'shen' and defeat the purposes of the 'kwei.' To this end an elaborate system of ritual has been developed, involving the idol-worship of Buddhism and the ancestral veneration of the Confucian classics.



A white-worn path winds for twelve miles through the mountains south of Tsinan to this cynosure of devout Buddhists. Pilgrims lunch at small tables set in the stone-paved court-yard before worshipping in the Cave of the Dragon beyond.

The people have various ways of protecting themselves against evil spirits. It is a well known fact that spirits cannot turn corners, so that the 'spirit screens' erected directly in front of the doors prevent their entrance into the houses. Sometimes, however, these are not sufficient. A foreigner living in a Chinese district erected a sky-light on his roof which towered above the screen and roof of his neighbour, giving spirits an opportunity to rebound over both obstructions into the courtyard. The perplexed neighbour sought the assistance of sooth-sayers in solving the problem. The final outcome was that three bottles were set in the roof with necks pointing at the sky-light and mouths uncovered to catch and imprison the rebounding spirits. Loud noise is considered one of the best demon-expelling instruments. Every wedding, funeral, and street procession is accompanied by the ear-splitting combination of rattling drums, blasting trumpets, clashing cymbals, and popping fire-crackers. Within the houses pieces of red paper symbolizing fire; images of the cock whose crow puts to flight night-prowling spectres; and sheets of old writing representing the classics, are used with great effect against intruding demons.



On the campus of a Chinese university the water tower takes the picturesque form of the Manchu pagoda.

The amusements of the people are few and simple. Yet they are effective in providing release from the constant work and worry of a precarious livelihood. The open markets are the chief recreational centres. Here on almost every afternoon, large crowds gather to applaud the open-air performances of comedians, musicians, sword-dancers, and acrobats whose 'gate receipts' at the end of each performance consist of coppers tossed into the ring by spectators. The travelling showmen parade the streets, attracting attention by hammering on a brass gong. When a crowd has gathered the show starts. Sometimes trained monkeys imported from Formosa delight the crowds with their antics. Not infrequently diminutive Chinese dogs, warbling birds, and even singing insects appear on the programme. The vaudeville theatres are popular with those who can afford the time and the price of admission. The Chinese drama whether of the historical or of the modern type is always accompanied by the deafening 'music' of a 'tin pan orchestra' grouped on some part of the stage. These 'musicians' pound and blow on their instruments with such a will that they can be heard for many 'li' in all directions and the strident songs of the actors are rendered completely inaudible, this being the only conceivable justification for the orchestra. At the present time one of these theatres is drawing record crowds; the latest attraction, an armless man who can use his feet with great dexterity.

There are many, however, who create their own amusement. A favourite game, especially in the cold period of winter, popular with children and loitering ricksha-boys, consists of keeping a little feathered weight in the air by kicking it with the side of the foot. Some of the players become very skillful at this surprisingly difficult feat, adding all sorts of flourishes. Often a group of coolies will stand in a circle and pass the weight around from foot to foot. The ricksha-boys and barrowmen are continually playing pranks on one another, with the usual outcome of a good natured rough-and-tumble in the street and a general laugh.

Fundamental Factors in Canadian Geography

by GRIFFITH TAYLOR

Part I — Geological Control

ONE of the many definitions of Geography and one of the most inspiring compares the subject to Town-Planning. In the development of a large city a group of experts unite to interpret the various factors which help to produce the desired result. In the development of a young Nation the Geographer is the interpreter who links the factors which must be combined to produce a vigourous nation. In effect Geography is Nation Planning. In Canada many expert workers are investigating the geology, climate, soil, forests, mines, water power, etc. but there have not been many studies in the geographical sense co-ordinating all these resources and linking them to the human factor. Professor Mackintosh's study of the Prairie Provinces is an outstanding example of what we want in Canada. In the present article the writer hopes to present a number of fundamental facts, using the technique which is an essential feature of modern geographical research.

After twenty years investigating the settlement problems of another great pioneer land, Australia, the writer is convinced that the proper approach to the study is by the way of the geological structure or "Build". Only when we have a clear picture of the Build can we hope to understand the topography and climate and communications. This is of course well understood, but the writer would go beyond stressing the relationship of metal and coal mines, of areas of deep soil, of water supply, etc., with the Build; he believes that a brief excursion into the geography of far-distant times will better enable the layman to understand the distribution of resources which so largely determines the greatness of a country. Let us commence therefore with four maps which illustrate the Paleo-Geography of Canada.

In Fig. 1 the lowest stage shows the appearance of the continent in Upper Cambrian times, about 420 million years ago. There is little resemblance to present day conditions (which are indicated by the broken coastline in the diagrams). But the important fact to be noted is that the highest points of Canada, the Rockies and the Northern Appalachians, were seas in those days, and for millions of years later. But the low-lying sterile area of rocks called the Pre-Cambrian (or Laurentian) Shield was land as it is today. In the seas, of course, were laid down the deposits

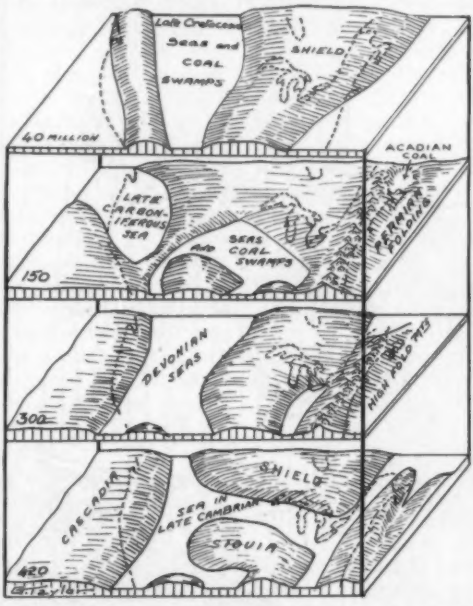


Fig. 1. A Stage-Diagram showing in a generalised fashion the geography of North America 40, 150, 300 and 420 million years ago. Notice that the Laurentian Shield is little affected by the crustal folding. The Appalachians were huge mountains in Permian times. The Rockies did not develop until the end of Cretaceous times. (Data from Schuckert and Dunbar).

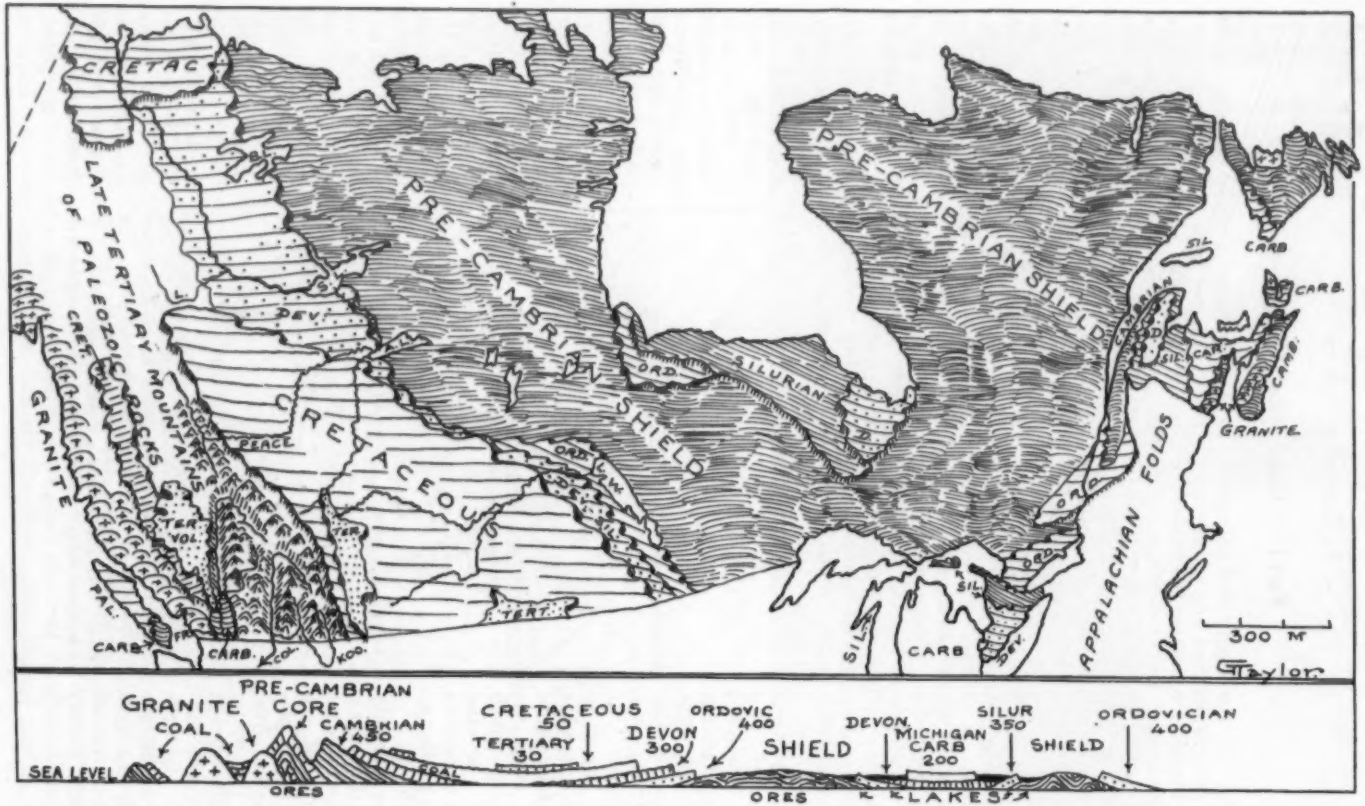


Fig. 2. A Mantle-Map of Canada, in which the later geological formations are shown as "mantles" flung over the older formations. Below is given a simplified geological section near the southern border of Canada. Figures mean millions of years ago.

of those times, so that Cambrian rocks on the geological map therefore generally indicate where the Cambrian *seas* were, and we have to infer the position of the *lands* somewhat indirectly. In Fig. 2 the two Cambrian areas in the Rockies and the Maritimes are shown.

In the second map of our Stage-Diagram (Fig. 1) are shown the conditions in Devonian times, some 300 million years ago. There is still a wide marine trough (or Syncline) in the west, being filled now with Devonian sediments. Today these occupy large areas in the Mackenzie-Saskatchewan region (Fig. 2). In the east the weak sediments laid down in the earlier trough have yielded to earth movements and have been wrinkled to form high mountains. The Pre-Cambrian Shield is so strong a structure that it resists folding and remains level land throughout our story.

In the third map (Fig. 1) the conditions at the end of the Paleozoic period, some 150 to 180 million years ago, are generalised. Very little of Canada was under water. Land plants were now abundant, and in the central United States enormous swamps gave rise to some of the richest coalfields in the world. In the Maritimes we find a small area of the period producing valuable coal there. In the Canadian Rockies there are similar sediments, but these do not contain any notable coal. At the end of this period another great development of mountains occurred in the east. The old Devonian mountains had long been worn down, but this region was again violently crumpled in Permian times to form high mountains, which arose in this "Appalachian Period" in many parts of the world.

In the uppermost map of the Stage-Diagram (Fig. 1) the Paleo-Geography of late Cretaceous times, some 40 million years ago, is indicated. The great Syncline of the west is much in evidence, though it varied in extent throughout the ages. Conditions were again favourable for the development of peaty swamps, and accordingly the greatest coal deposits in the world developed in Canada and the adjacent United States. In general this fairly late coal is not of the best quality, since there has not been time for it to be 'kneaded' by Mother Nature, and so to be changed from soft earthy coal to the better hard bright coal. The Shield still remains much the same, and there is no sign of the Young Folds of the Rockies, which did not begin to appear until the close of the Cretaceous. As usual it was the weak sediments in the large Synclines which yielded to earth compression. During Tertiary times (the last 30 million years of the geological record) the Cretaceous sediments and thousands of feet of older rocks beneath them were buckled up to form the Rockies. This stage is indicated in the section below Fig. 2.

In Fig. 2 is shown a Mantle-Map of Canada, which the writer finds to be the best way to interpret the geological strata of a region. In these maps, by emphasising the front edges of the formations, it is possible to show that they resemble a series of 'mantles' laid one on top of the other over the basal Shield.

There are clearly five main geological divisions in Canada. First, the *Pre-Cambrian Shield* surrounding Hudson Bay is dominant. Secondly, there are three undisturbed Paleozoic formations laid down along the southwest shores of Hudson Bay. They may be termed the *Hudson Paleozoics*. Then, thirdly, there is the rather complex patchwork of 'mantles' which lie on the western flanks and the northern ends of the *Appalachian Folds*. Here the Cambrian Core is covered with an Ordovician Mantle, and capped by Devonian. It forms the southern shore of the Saint Lawrence. In the Maritimes the essential feature is a surface mantle of Carboniferous rock, which contains much valuable coal. In southern Ontario is a sequence like the Hudson Paleozoics, with the hard Silurian mantle forming a ridge (Cuesta) which extends from Niagara Falls all round Lake Huron and Lake Michigan as far as Chicago.

The fourth division is the *Western Slopes*, comprising the area between the Shield and the Young Folds of the Rockies. This area consists of two parts, of which the northern comprises the Mackenzie Basin (formed of the Devonian mantle) and a later Cretaceous mantle crossed by the Peace

and Athabasca rivers. The southern part is the Saskatchewan Basin, almost wholly in the Cretaceous mantle, though the edges (cuestas) of Paleozoic rocks are exposed near Lake Winnipeg. The outstanding feature of this division is the way in which the Cuestas of the younger rocks help to hold up the waters of the huge lakes lying on the Shield.

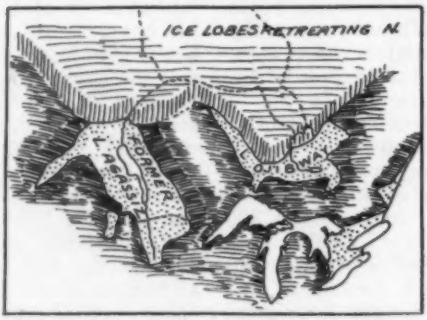


Fig. 3. The evolution of the Lake Deposits of Winnipeg and the Clay Belt. (After Upham and Tanton).

The fifth division, the Young Folds, is the most complex. The latest folding forces raised the Rockies in a series of ridges running Northwest to Southeast. It is supposed that the folding was due to the squeezing of weaker sediments between the resistant Shield and the very stable crust under the north Pacific Ocean. A broad and shallow downfold flanked the uplift on the east, and along this the Mackenzie river makes its way to the Arctic Ocean. The close-set wrinkles of the Young Folds have determined the curious upper courses of the rivers in British Columbia, such as the Kootenay, Columbia, Fraser, Peace and Liard. The topography is rugged, and hence very different from the relatively undisturbed rocks in most of Canada. Large areas are covered by Tertiary volcanic lavas which flowed out as a result of the crumpling of the crust. A great deal of erosion has removed the upper portions of the folds, so that the ancient rocks forming the 'cores' of the folds are exposed in many places. The coal has been compressed and improved in quality in the small fold-basins in this fifth division. The glaciers of the last Ice Ages (within the last one million years) have carved out deep valleys and fiords in this area of Young Folds. Hence good harbours, but only very small areas of good agricultural land, are characteristic of our last division.

Although the former coalfields have been disrupted, elevated and often completely eroded in the western folded area, yet the deep valleys and the uplift of the once deep-seated ancient rocks have greatly improved the chances of finding metallic ores. This is indicated at the base of Fig. 2, where is given a simplified geological section near the southern border of Canada. In the east the valuable 'Coal Syncline' of Carboniferous rocks in Michigan is shown, bordered by the Frontenac portion of the Shield on the east. The Great Lakes (black in the section) lie in hollows, in part eroded in the softer Devonian and Ordovician mantles, while the hard Silurian Cuesta separates them from each other.

In the foregoing maps only the solid rocks of the crust have been considered. Practically the whole of Canada has been covered by the ice sheets of the Great Ice Age, and these have torn away a good deal of the mantle of soil which covered the rocks, and unfortunately have dumped most of it in the gigantic moraines which cover northern United States. The Pre-Cambrian Shield has lost most of its agricultural value for this reason. However in hollows in the Shield there are many areas with a fair covering of soil still preserved. Another feature which has greatly contributed to the resources of the Shield is directly due to the great ice sheet. It is illustrated in Fig. 3.

As the ice retreated across the main divide between the Hudson and the southern drainage basins, the rivers on the north of the divide were dammed back by the ice front. In this way two colossal lakes were formed, each comparable in size with the combined area of the present Great Lakes. The waters of the Nelson river (now draining Lake Winnipeg) were dammed to form glacial Lake Agassiz. In these quiet waters lake-silts were laid down for hundreds of years, forming the fertile soils of the

famous Red River wheat area. This epoch in Canadian Paleo-Geography accounts for the first farms of inland Canada, which were established by Lord Selkirk in 1812. It is now one of the most important wheat areas in the world. Lake Winnipeg is the shrunken relic of the former Glacial Lake.

Of even greater interest in the future development of the Dominion is the similar lake which arose south of Hudson Bay. It has been called Glacial Lake Ojibway, and its origin is clearly indicated in Fig. 3. In this part of the Shield in Northern Ontario and Quebec the damage done by the eroding ice sheet has been offset by the deep layer of clay deposited later in the quiet waters of the huge Glacial Lake. The northern National Transcontinental Railway, extending westwards from Quebec, traverses this belt of agricultural land for nearly 600 miles. Though the summer is short we shall see crops grown here to supplement the valuable metallic ores which are and will be found in many parts of the ancient Shield.

Part II — Climatic Controls

Man inhabits the earth by favour of satisfactory geological and climatic controls. The former determine the topography, the mining resources and, to a large extent, the soil resources. It is true that man can modify climatic controls and exist in defiance of unattractive climates with such devices as 'Central Heating', or the even more important 'Central Cooling'. But such devices cannot be used all the year round by large populations, so that the statement that 'Climate Controls Settlement' will always hold good.

In Fig. 4 some of the characteristic features of the Canadian climate are illustrated. One of the primary distinctions in climate is between those with a small range of temperature in the year (*Marine* Climates) and those with a large range (*Continental* Climate). It is found that most of this range of temperature in the Cool Temperate Zone is due to the extreme cold of *winter*, for in summer the conditions vary much less over wide areas. For instance Madrid and Naples lie in about the same latitude as Toronto and Chicago, but everyone knows that the climates are not at all alike. Which is the *normal* climate for latitude 43? We can usefully examine this problem by considering the January 'Isanomalous' chart.

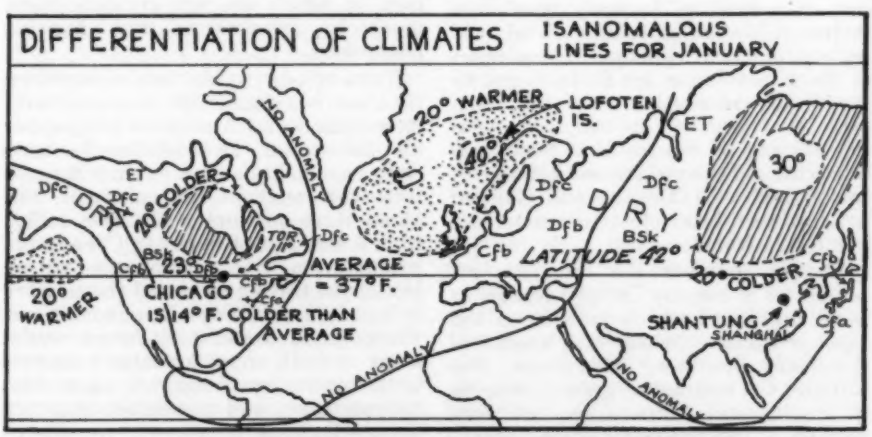


Fig. 4. A chart showing foreign climates akin to those of Canada. The ruled areas have midwinters much colder than the averages for their latitudes. The dotted areas have midwinters much warmer. Chicago and Toronto have homoclimes in North China. Koeppen's formulae for Canadian climates are also added.

When we average the January temperatures of places along this latitude we obtain a figure of 37 degrees Fahrenheit. Since Chicago has a January average of 23 F. it is obviously 14 degrees colder than the normal for its latitude. Similarly Toronto is 11 degrees colder. But Madrid and Naples are respectively 10 and 6 degrees warmer than the averages for their latitude. These figures—14, —11, + 10 and + 6 are 'Anomalies', and lines can be drawn through equal anomalies (Isanomalous lines) as is done in Fig. 4. We find that Toronto and Chicago lie close to the centre of Negative (cold) anomaly, while Naples and Madrid are near to the positive (Warm) anomaly. Hence neither group has a normal climate. This is only to be found between the two centres along the line of 'No Anomaly' (Fig. 4), which runs just off the east coast of North America. The new port of Churchill has a peculiarly cold climate, while the Lofoten Isles off Norway have what we may call the most 'unexpected' climate in the world. It is 40 degrees warmer in midwinter than one might reasonably suppose.

It is clear then that latitude alone is no very good clue to the climates resembling those of Southern Canada. We find in Eastern Asia another area of Negative Anomaly, which is always a characteristic of Continental Climates, just as a Positive Anomaly is often a feature of Marine Climates. Clearly the regions of similar climates (*Homoclimes*) of the Great Lakes are to be found to the south and south east of this large area of Negative Anomaly in Asia. Accordingly we can say that Shantung, Shanghai and the vicinity in China agree pretty well with Toronto and Chicago as regards their most characteristic month (January).

Luckily however the economic resources of a country do not depend so much on the winter climates as on the summer climates, which vary much less drastically over very wide areas. For instance the summer or growing seasons of Naples and Toronto are not very different. The eminent German climatologist Koeppen has produced a classification of climates which lays stress on the rainfalls as well as the temperatures, and has devised formulae for the different classes. A few of these formulae which occur in Canada are shown on Fig. 4. Thus in the extreme north of Canada and Siberia the tundras are both labeled ET. Most of the forest lands of the centre and north have the formula Dfc. Here D means Snow-Forest, f means fairly uniform rain, and c means cold (less than 4 months over 50 F.). Homoclimes are found from Leningrad to Vladivostok.

The region of the Great Lakes and Southern Manitoba is Dfb, where b means "more than 4 months over 50F." Its homoclimes are Poland and Central Russia. The Lake Erie and Vancouver regions are Cfb, and are the homoclimes of Central Japan and North France respectively. Southern Saskatchewan is BSk (cold, dry Steppe) and these prairies are the homoclimes of the Siberian region north of Aral and Balkash.

It is clear therefore that Canadians have a very special interest in Poland and the Soviet Union, since the climates and so many of the resources must be the same. In fact only a small area of Canada near Vancouver has the Marine Climate associated with the home-land of Western Europe. Hence we must realise that our environment is quite different from that specially studied in English texts, and needs local investigation, in which we can, perhaps, learn much by interchange with Russian researchers.

Turning now to the local controls by the Canadian climate, they are peculiarly interesting to an Australian geographer like the writer. In Australia the temperature conditions are in general satisfactory throughout the continent, but about three-quarters of the area suffers from a shortage of *rain*. In Canada the precipitation is in general satisfactory, but about three-quarters of the country suffers from *low temperature* conditions. Planning for satisfactory future settlement in both countries largely consists in the production of accurate maps, their interpretation and translation into enlightened action.

In a short article of this character one can deal only with very general problems. We may say, therefore, that,

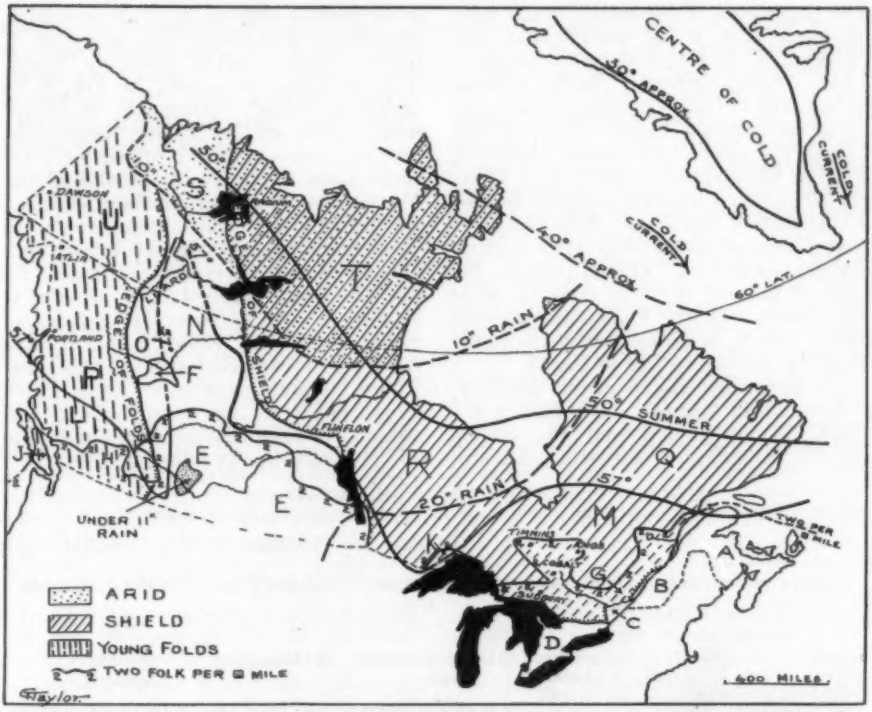


Fig. 5. An analysis of Canadian population, present and potential, in terms of Geographic Controls. Areas A to K already have over two people per square mile. Some of the larger metal mines are shown, and Trail, B.C., should be added.

with a few exceptions, lack of rainfall is not a major factor in the broad aspects of Canadian settlement. One notable exception is found in Southern Alberta (Fig. 5). Here is a small region which receives less than eleven inches of rain. It is clearly a "Rain-Shadow" area in the lee of the Rocky Mountains, which cause the descending west winds to become adiabatically heated and dry. There are also sheltered dry valleys in British Columbia, but the presence of numerous rivers makes irrigation a simple matter.

Turning now to temperature control and confining our attention to summer temperatures, the first peculiarity of the isotherms is that they do not run west-east as we should except in the level region of central and eastern Canada. In Fig. 5 the west-east direction is shown by the line of 60 Latitude, but the isotherms run diagonally across this direction, i.e. from Northwest to South-east. This is in large part due to the major control being Greenland and not the North Pole. The enormous Ice-Cap of Greenland and the cold Arctic currents flowing down each side of it, distort the summer isotherms, much as if the Pole were in the centre of Greenland. Possibly if Greenland were to vanish it would not help much. For though Northeast Canada would thereby become much warmer in summer, the bare character of the Shield would prevent close settlement. Luckily the best areas of deep soil (associated with younger 'mantles') are found far to the west in the Mackenzie Basin, where the Greenland control is least effective. Here also the warm dry Chinook winds lick up the snow cover in a remarkable fashion.

Long ago scientists such as Stupart and Unstead suggested the temperature control which would be found to control the northern extension of agriculture.

The bitter cold of the winter is not very material, but it is found that the isotherm of 57 F. for the months June, July, August gives a fairly reliable criterion as to future practical croplands. (It is curious how closely this isotherm follows the edge of the sterile Shield, to which it has no obvious relation). There are not enough weather stations to plot it accurately north of Athabaska, so that different authorities give slightly different positions. This is perhaps the most important isopleth (line of equal distribution) in the Canadian environment, and it is indicated by the figure 57 along the heavy line in Fig. 5.

We have now discussed two limits to settlement in Canada. The first is the Pre-Cambrian Shield and the second the 57 F. summer isotherm. A third is the eastern edge of the huge mountain area which was turned into a jumble of folded ridges during Tertiary times. This line also is shown in Fig. 5 as 'Edge of Folds'. There are of course many fertile valleys among these folds, but not areas of level prairie or level rocks such as are characteristic of the Prairie Provinces and Southern Ontario. Excluding these less attractive areas there are left the Maritimes A, Southern Quebec B and C, Southern Ontario D, and the areas labelled E, F, N and O in Fig. 5. All of these are capable of closer settlement; while N and O have hardly been exploited at all at this date. There are also many other areas which have claims to our consideration, and these have been labelled in the map and are classified in the following table.

SETTLEMENT AREAS IN CANADA

	Paleozoic	Prairies	Folds	Shield
Main Products	Farms, some mines	Farms, Coal	Fruit, Mines	Metals, Lumber
Class I Over 2 per square mile, South of 57 F.	A Maritimes B S. Quebec C S. Ottawa D S. Ontario	E Saskatchewan Basin F Mid Peace R.	H Okanagan J S. Vancouver	G Sudbury-Saguenay K Fort William
Class II Potential Settlement; South of 57 F.	....	N Athabaska-Liard	L Upper Fraser to Coast	M Clay Belt and vicinity
Class III Transition	....	O Fort Nelson	P Skeena	....
Class IV No notable settlement, except mines, likely	Northern Archipelago	S. Lower Mackenzie	U Yukon	Q N. Quebec R Patricia T Keewatin

The essential features of settlement are briefly analysed in the above table. When a Dominion has been undergoing settlement for as long as 300 years, the present-day population is the best clue to future population. In Fig. 5 the boundary of important settlement is shown by the isopleth of two per square mile (labelled 2). In the above Table all the regions with this density are given in Class I. In the second class (II) are regions still empty but with a fairly reasonable summer. They will certainly fill up next. In Class III conditions are not very attractive, but important settlement will undoubtedly be possible in restricted areas. In Class IV, apart from Mining, there is little chance of settlement. However the presence of water-power and lumber gives this empty area far greater possibilities than in the huge empty lands in Australia, where there is no water, and therefore no water-power or lumber!

A few further notes will not be out of place even in this brief summary. The assets and possibilities of regions A, B, C, and D are fairly well known. The considerable density of G is rather surprising since it is on the sterile

Shield. But small farms, water-power, lumber and pulp account for many of the inhabitants, while the metal mines north of Sudbury have led to the growth of quite large towns. This is indicated in the following Table based on the 1935 populations.

Sudbury	19,700
Timmins	17,000
Cobalt, etc	9,600
Kirkland Lake	9,900
Noranda	4,000
Amos	3,000

The important population in the area K is mainly due to the shipping facilities at Fort William and Port Arthur, etc. together with many small mines in the vicinity. Such entrepots are not likely to develop elsewhere on the Great Lakes. At F is the very interesting settlement at Peace River, where wheat and other crops are grown successfully, even though it seems to be actually on the critical summer isotherm of 57 F. This region is a good omen for extensions to the Athabasca Valley and even north to the Fort Nelson and Liard Valleys (O) in the cooler west. Of course the variability of the weather as regards rain and frost must considerably affect future settlement. But these cannot be discussed here, though they are treated in an excellent fashion in Mackintosh's "Prairie Settlement".

The character of the climate changes so completely as we cross the Rockies that controls of settlement in British Columbia are rather different from these in the rest of Canada. The climate is much moister and less extreme, so that fruit and dairies rather than grain will be the main agricultural resources. However, the population will undoubtedly spread northward considerably, but it will be long before the population-isopleth 2 passes north of the isotherm 57 F.

Part III — Past and Future Distributions of Population

Canada seems to offer a good field to test the validity of the 'Possibilism' theories of certain geographers. They believe that man is not controlled by his environment, but that he himself decides which of possible methods of exploitation of Nature he shall pursue. The writer uses the term 'Autocratic' to express this idea that man can choose *his own* path in life; and the term 'Geocratic' to indicate the philosophy of Humboldt and Ratzel (Control by Environment), to which he himself adheres.‡ In a region of such immense resources as the United States it is easy to see how the 'Autocratic' school of Geographers could arise. But a student of hot arid Australia or of cold sterile Canada is likely to be a little more doubtful if man really has much control over Nature.

The Stage-Diagram forming Fig. 6 may help to explain how this idea of 'choice of possibilities' has arisen. It is true that in Southern Ontario we have seen man at times dependent chiefly on Fur, then on Lumber, then on Farming, Hydro-electric Power and Mining. But all these in turn depend on Nature's bounty, and given sufficient knowledge could be predicted as the inevitable development of an expanding nation in the given environment.

In the lowest stage in Fig. 6. we see a generalised economic map about 1750, showing that Fish, Farms and Fur had expanded to the limits approximately there shown. (The dates given are from the "Economic History of Canada" just published by Mary Quayle Innis). Some sixty years later, by 1810, farming had spread approximately to Detroit, while Mackenzie was exploiting for Furs the river basin named after him. By 1870 Mining was becoming of some importance, and gold (Au), silver (Ag), and iron (Fe) mines were being exploited both near the Saint Lawrence and on the Fraser River. Still more important, Selkirk had sixty years earlier settled his isolated band of farmers on the silts of Lake Agassiz in the heart of the continent. Within a very few years the modern migrations to the wheatfields of the Prairies were to begin. In the last and uppermost stage we see in a generalised fashion the conditions today. The whole Dominion is being exploited not only for Furs but for metal mines; the latter in part by air transport. Agriculture has covered most of the inland prairies, and will extend north

‡ See the writer's recent paper "Geography the Correlative Science", Canadian Journal of Economics and Political Science, November, 1935.

(and into the Clay Belt) as indicated by the crosses. Manufactures have spread along the Saint Lawrence from Montreal to Ottawa and Windsor, in large part owing to the bountiful water-power.

But while there have been these striking advances and changes in the type of industry, man has not really been a free agent. His advance from Fur-hunting to Wheat-growing is only possible where rain and sun and soil are satisfactory. *All* the Fur country cannot be utilised for Wheat, even if man so wishes. We shall never see Hydro-electric power or coalfields leading to the development of factories in that half of the southern continent known as 'Empty Australia', however much man may wish to replace the sparsest of pastoral occupation by better-paying industries. On the other hand it seems clear to the writer that in the future the immense coal resources of Alberta must inevitably be utilised, as the more accessible coalfields are used up elsewhere. Man may very probably some day 'choose' to give up ranching in the drier parts of Alberta, and turn to manufacturing based on the almost inexhaustible coal. But he is none-the-less controlled by his environment.

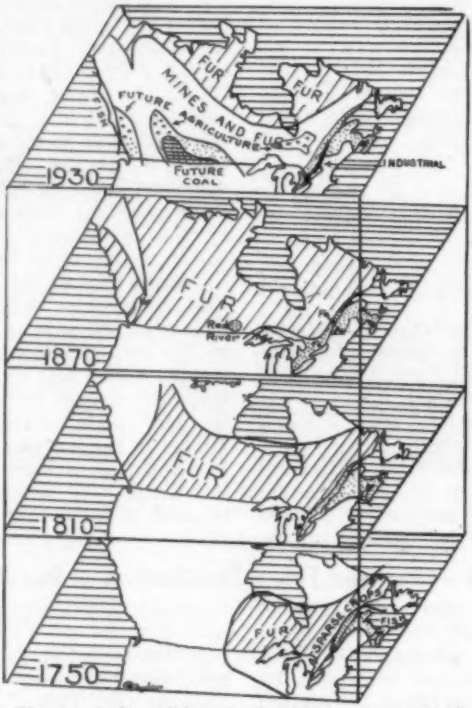


Fig. 6. A Stage-Diagram showing in a generalised fashion the spread of economic zones from 1750 to 1930.

Geographers are agreed that the population density of Europe is almost wholly controlled by crops and coal. Granting this, in the last diagram (Fig. 7) the writer has attempted to answer the following question. How many people can Canada support *using the same standards* as those of Northern Europe, including the use of coal to the same extent?

As we have seen in the earlier sections, the climates of northern and eastern Europe are not unlike those of Canada. This first approximation consists therefore merely in comparing approximately equal areas of Canadian and European lands, and noting the populations maintained in the latter areas. (In the three Scandinavian countries all but a negligible proportion is contained in the southern thirds). These data are also contained in the following Table.

We may not want so many people. We cannot at present utilise the Alberta coal. Many other factors, such as transport, mechanisation of farms, exchange of commodities, birth control, standards of living, etc. have not been considered. But it is difficult to deny that Canada's assets (and remember we have ignored all but the southern part of the Dominion shown dotted in Fig. 7) are approximately equivalent to those of the six European countries specified, which today maintain a population of over one hundred millions.

It is the special duty and privilege of the geographical workers in Canada to see that the future millions of Canada are settled where Nature has furnished the best environment for them.

POPULATIONS OF SOME EUROPEAN COUNTRIES

European Country	European Population	Canadian Parallel
South Norway	3 millions	South British Columbia
Germany and Poland with 450,000 million tons of coal	92 millions	Prairie Provinces with 667,000 million tons of coal.
South Finland	3 millions	Clay Belt
Czecho-Slovakia, very rugged in east	14 millions	S. Ontario and Quebec
South Sweden	6 millions	Maritimes
TOTAL POPULATION	118 millions	

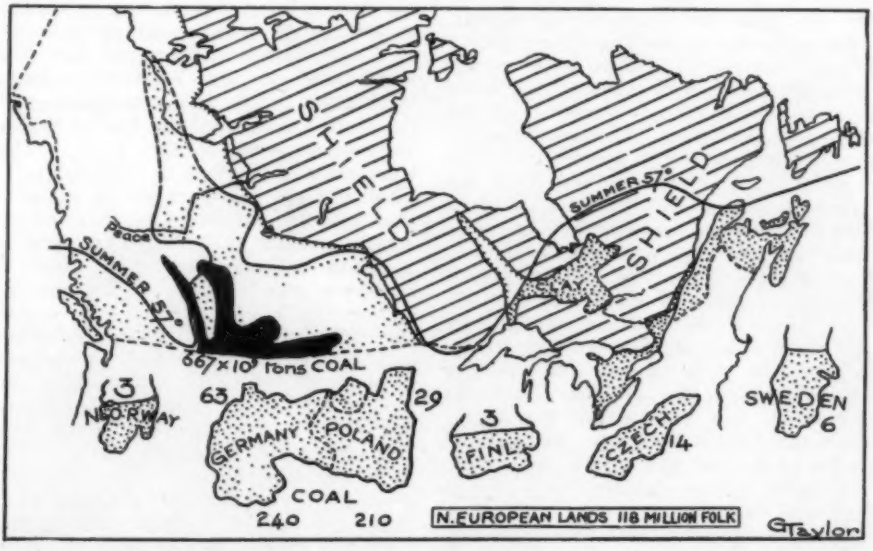


Fig. 7. Regions of present and future fairly close settlement in Canada (as determined solely by climate and crops) shown by the dotted areas. The huge area of cretaceous coal is shown in black. Below, to the same scale, are six European countries with their populations (in millions).

Editor's Note Book

VALE

Pressure of other duties has compelled me to resign the Editorship of this Journal. *There is, inevitably, an element of sadness and regret in severing one's connection with an occupation that has been on the whole congenial, that has served a useful purpose, and that has brought one into contact with a number of interesting people. It has been the policy of the* Journal *since its establishment nearly six years ago to interpret Geography, and particularly the Geography of Canada, to the average man and woman. Like many other things that is not quite as easy as it sounds. Geography has grown enormously within the last few years. It is no longer merely an unregarded sister of Geology, a Cinderella in the world of Science. It has expanded into one of the most important and most profoundly significant of the branches of human knowledge, and one need not hesitate to say that those of its several branches that occupy themselves with human history, human relations, human nature, are vital. The* Journal *has tried, with such success as it might win, to bring these as well as the older aspects of Geography before its readers in a form that might be clear and attractive as well as accurate. To those all over the Dominion who have helped me in innumerable ways to make the* Journal *worth while, and especially to the retiring President of the Society, Dr Charles Camsell, whose understanding, encouragement and sympathy have been unfailing, I wish to offer my very sincere gratitude. I hope that my successor may count upon the same whole-hearted support.*

LAWRENCE J. BURPEE.

Our Contributors

The leading article in this number is condensed from the Presidential Address at the Annual Meeting of the Society by Dr Charles Camsell. It is a matter of very great regret to all members of the Society that, because of the increasing pressure of his official duties as Deputy Minister of Mines, Dr Camsell has found it impossible to accept re-election to the Presidency, an office which he has filled, with complete satisfaction to the members, and with great advantage to the Society, since its organization over five years ago. The Society fortunately will still have the benefit of his knowledge and experience as a member of the Board of Directors.

There is also published in this number the first of what it is hoped will be many articles by Dr Griffith Taylor, Professor of Geography in the University of Toronto. Geography as a many-sided subject, touching in one way or another Geology, Economics, History, Sociology, and several other departments of human knowledge, is slowly coming into its own. It is only within the last few years that it has received definite recognition in the larger universities of the United Kingdom, the United States and other parts of the world. The University of Toronto in establishing a Chair of Geography has set an example that will without doubt be followed by other Canadian institutions of learning as soon as the economic situation improves, and it is a fortunate circumstance that Toronto was able to secure the services of a man whose scholarship and broadmindedness and enthusiasm must have a profound influence on the teaching and understanding of Geography not only in his own university but throughout the Dominion.

Sidney Ells, already well known to readers of the *Journal*, describes and illustrates another famous spot in the Canadian North, closely identified with the history of exploration and the fur trade — Portage la Loche, also known as Methye Portage, the old and beautiful gateway to the valley of the Athabaska and the Mackenzie River country.

William J. Davidson, of Fort William, Ontario, draws from his own experience an invigorating story of deep-sea fishing in the North Atlantic. Anita Leslie describes a journey on horse-back to historic places and beautiful spots off the beaten track in Ireland. Ronald A. Keith, a Canadian who has spent some years in China, pictures life in Tsinan, an ancient town on the Hoang Ho, between Pekin and Shanghai.

THE SMOKE OF THE BRITISH EMPIRE

Helen Vinson—lovely and glamorous in so many of her roles—made her stage debut in a satire on "the movies"! When she broke into pictures she was given parts where her beauty and magnetic charm made her the irresistible enchantress.

Miss Vinson has a sunny and delightful personality and those working with her at the Gaumont-British studios have found her possessed of a really amusing sense of humour. Here she is seen outside her portable dressing room, sitting and smoking after tea with Noah Beery, during the filming of "King of the Damned".

Wherever you go on the Gaumont-British lot, you will find the stars showing a marked preference for W. D. & H. O. Wills' Gold Flake Cigarettes, because of their fine Virginia flavour and traditional English quality.

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Watch your local theatre for Helen Vinson as the heroine of "King of the Damned" — another early Gaumont-British release. See Miss Vinson in her most appealing role.

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Annual Meeting

The Annual Meeting of the Society was held in the Lecture Hall of the National Museum, Ottawa, on February 19th. Reports were read and considered in connection with the Society's activities and plans discussed for its future development. The Presidential Address was delivered by Dr Charles Camsell in the Chateau Laurier on the evening of the same day. Dr Camsell, with the aid of numerous lantern slides, described his important journey by air last summer through a comparatively unknown part of Northwestern Canada.

New Map of New Brunswick

Covering the southern and central parts of the province of New Brunswick, also portions of Nova Scotia and Prince Edward Island, the new Fredericton-Moncton sheet of the National Topographic Series, provides a comprehensive map of about three-quarters of the province, with its coastal and inland fishing waters, hunting districts,extensive coast-line and other interesting features.

The authentic history of New Brunswick dates back to 1534, when Jacques Cartier first sighted its shores and landed about 35 miles from the mouth of the Miramichi river. It was not until 1603-04 however that the territory was further explored, at which date Samuel de Champlain discovered the province's leading inland waterway, naming it the Saint John river.

New Brunswick comprises an area of about 28,000 square miles. To the north, south and east it is washed by the Atlantic and it has a coast-line of approximately 600 miles, indented with deep bays and fine harbours. The province was originally covered with forest and the greater part of it still remains so. The forests are interspersed with lakes and the country is covered with a network of rivers.

The scenery is both picturesque and varied. From northwest to southeast, the majestic Saint John river flows for over 400 miles through a fertile and delightful country, famed for its productiveness and beauty. The lower part of the Saint John valley from Fredericton, the provincial capital, to the sea was the part first settled by the United Empire Loyalists whose descendants form the bulk of the present population of the valley. On the opposite side of the river from the capital is an Indian village which marks the spot where the French and English each had a fort in the earliest times. At the river's mouth is the city of Saint John with its harbour, one of the largest and finest on the continent. Here also are the famous "reversing" falls, where the flow of water and the fall is in one direction when the tide is going out, and the reverse when it is coming in.

Sea Birds of Gaspé

The Gaspé peninsula, in the eastern part of Quebec, has a well-deserved and fast-growing reputation as a region of unusual attractions for summer visitors. The highest mountains in Eastern Canada are found in the peninsula, and their striking and rugged scenery, combined with the beauty of an unspoiled sea-shore and the charm of the quaint, French fishing villages is largely responsible for inducing many tourists to make the trip.

While the benefits of this tourist traffic are generally distributed through the region, no community receives a larger share than the little village of Percé, situated at the very tip of the peninsula, in the shadow of Mount Sainte-Anne. Percé has a combination of attractions for the summer visitor that is unique in eastern North America. Not only has it the mountain and seaside scenery, dark forests, green pastures, quaint fisherfolk, historical associations, boating, fishing, bathing, and hiking, which it shares with many of its sister villages of the Gaspé region, but it has two special ornaments of superlative interest — the great Percé Rock and the populous seafowl colony that nests on the top of the rock and on ledges on the face of the red sandstone cliff with which Bonaventure island, near Percé, fronts the sea.

Percé Rock, with its sheer sides rising directly from the water for nearly three hundred feet, and its great arched passage-way, eighty feet in span, through

which small boats may pass, has become well known to the public from photographs and paintings. There is nothing else like it on the Atlantic coast of this continent.

The thousands of sea-birds that nest on Percé Rock and on Bonaventure island afford spectacles quite as striking and as thrilling to the visitor as the great rock itself. More than 12,000 gannets — great white birds as large as geese, with black wing-tips — make their summer homes here. Thousands of them, looking at a distance like great snowbanks, sit close-packed in serried ranks on their nests on the lofty ledges, while hundreds of others soar and wheel majestically over the sea before the precipice. Other remarkable sea-birds, including black guillemots, double-crested cormorants, Leach's petrels, herring gulls, kittiwake gulls, and such uncommon and peculiar species as puffins, murres, and razor-billed auks, form part of this great assemblage.

Fortunately, this interesting bird city is so situated that it may be observed and photographed conveniently and in comfort without harming or disturbing its feathered citizens. Sea-going motor-boats make a specialty of carrying parties of visitors past the lofty cliff where the gannets nest, and there are excellent points of vantage on solid land at the top of that cliff and on the crest of the mainland cape opposite Percé Rock.

Recognizing the importance of this bird colony, both as a great nursery for seafowl and as a tourist attraction which brings well-earned income to the residents of the region, the Dominion Government and the Government of the Province of Quebec by joint action made it, many years ago, a permanent bird sanctuary, where birds may not be killed nor their eggs taken at any time. The colony has increased under these conditions and the streams of visitors that annually, by highway and railway, travel far to see it now afford convincing evidence of the wisdom of the action taken and of one of the values of bird-life to Canada under a policy of utilization with adequate protection.

Above: Zebra and Wildebeest in the Kruger National Park

Left: The Colosseum Theatre, Johannesburg, seating 3000 people

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The Franklin Expedition

On August 4, 1854, Dr. John Rae, Chief Factor of the Hudson's Bay Company, wrote a letter to Sir George Simpson, Governor of the Company, from York Factory, which was printed in the *Montreal Gazette*, October 23, 1854. The substance of this letter, which is one of the important documents in the records of the search for Sir John Franklin and his Expedition, follows:

"Let me now allude to the Expedition affairs. I arrived here on the 31st ult. with my small party, in excellent health, but I am sorry to say without having effected our object. At the same time, information has been obtained and articles purchased from the natives, which places the fate of a portion, if not all of the then survivors of Sir John Franklin's miserable party beyond a doubt.

I reached my old quarters at Repulse Bay, on the 15th August, and preparations were immediately commenced for wintering. On the 1st September I explained to the men our position, the stock of provisions we had on hand, (not more than 3 months rations,) and the prospects we had of getting more, etc., etc., pointing out all the danger and difficulty of our position. All readily volunteered to remain, and our exertions to collect food and fuel went on with unabated energy. By the end of September, 109 deer, 1 musk ox, 53 brace of Ptarmigan, and one seal had been shot, and the nets produced 190 salmon.

Of the larger animals above enumerated, 49 deer and the musk ox were shot by myself, 21 deer by Mistegan, (the deer-hunter,) 14 by one of the men, 9 by Ouligbuck and 16 by the other four men. The migration of the deer terminated about the middle of October and 25 more animals were added to our stock.

On the 28th of October, the snow being sufficiently hard for building, we were happy to exchange our cold tents for the more comfortable shelter of the

snowhouse. The winter was very severe, but the temperature in our snow-huts was never so low as in my winter quarters of 1846-7. Up to the 12th January we had nets set under the ice in the lakes; the nets were taken up on that date as they produced nothing.

On the 31st March my spring journey commenced, but in consequence of gales of winds, deep and soft snow, and foggy weather, we made but very little progress. We did not enter Pelly Bay until the 17th. At this place we met with Esquimaux, one of whom, on being asked if he ever saw white people, replied in the negative, but said that a large party, (at least 40 persons) had perished from want of food, some 10 or 12 days' journey to the westward. The substance of the information, obtained at various times and from various sources, was as follows:—

In the spring, four winters past, (spring, 1850,) a party of white men, amounting to about forty, were seen travelling southward over the ice, and dragging a boat with them, by some Esquimaux who were killing seals on the north shore of King William's Land, which is a large island named Kei-ik-tak, by the Esquimaux. None of the party could speak the native language intelligibly, but, by signs, the natives were made to understand that their ships or ship had been crushed by ice, and that the "whites" were now going to where they expected to find deer to shoot. From the appearance of the men, all of whom, except one officer, (chief), looked thin, they were then supposed to be getting short of provisions, and they purchased a small seal from the natives.

At a later date, the same season, but previous to the disruption of the ice, the bodies of about thirty white persons were discovered on the continent, and five on an island near it, about a long day's journey, (say 35 or 40 miles) to the N. W. of a large stream, which can be no other than Back's Great Fish River, (named by the Esquimaux, Outkoo-hi-ca-lik), as its description, and that of the low shore in the neighbourhood of Point Ogle and Montreal Island agree exactly with that of Sir George Back. Some of the bodies had been buried, (probably those of the first victims of famine,) some were in a tent or tents, others under a boat that had been turned over to form a shelter, and several lay scattered about in different directions. Of those found on the island, one was supposed to have been an officer, as he had a telescope strapped over his shoulder and his double-barrelled gun lay underneath him.

There appears to have been an abundant stock of ammunition, as the powder was emptied in a heap on the ground by the natives, out of the kegs or cases containing it, and a quantity of ball and shot was found below high water mark, having been left on the ice close to the beach. There must have been a number of watches, telescopes, compasses, guns, (several double-barrelled,) &c., all of which appear to have been broken up, as I saw pieces of these different articles with the Esquimaux, and together with some silver spoons and forks, purchased as many as I could obtain. A list of the most important of these I inclose, with a rough pen-and-ink sketch of the crests and

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initials on the forks and spoons. The articles themselves shall be handed over to the Secretary of the Hon. H. B. & Co. on my arrival in London.

None of the Esquimaux with whom I conversed had seen the "whites," nor had they ever been at the places where the dead were found, but had their information from those who had been there, and those who had seen the party when alive.

From the head of Pelly Bay,—which is a bay, spite of Sir H. Beaufort's opinion to the contrary,—I crossed 60 miles of land in a westerly direction, traced the west shore from Castor and Pollux River to Cape Porter of Sir James Ross, and I could have got within 30 or 40 miles of Bellot Strait, but I thought it useless proceeding further as I could not complete the whole.

Never in my former Arctic journeys had I met with such an accumulation of obstacles. Fogs, storms, rough ice, and deep snow we had to fight against. On one occasion we were 4½ days unable to get a glimpse of the sun, or even to make out his position in the heavens. This, on a level coast, where the compass was of little or no use, was perplexing in the extreme.

The weather was much finer on our return journey than when outwards bound, and our loads being lighter, our days' marches were nearly double the distance, and we arrived at Repulse Bay on the 26th May, without accident, except in one instance, in which one of the party lost a toe from a frost bite.

The commencement of spring was very fine, but June and July were colder. We were unable to get out of the bay until the 6th August.

Our progress along the coast as far as Cape Fullerton, was much impeded by ice; but on getting to the southward of the cape we had clear water, and saw no ice afterwards.

The conduct of the men, I am happy to say, was, generally speaking, good; and we had not a single case of sickness all the time of our absence.

Being anxious to send this to Red River by the first boats, I write in haste and briefly, but shall have the pleasure of sending a more detailed account by some future opportunity."

Amongst the New Books

Some years ago the reviewer listened for an hour to what was supposed to be a popular lecture, by an eminent astronomer, on the Galaxy known as the Milky Way, and was left more bewildered than before. It is fortunate that there are some men of science, like the present Astronomer Royal of England, Dr H. Spencer Jones, who have the faculty of bringing at least some of the more significant facts of Astronomy within the comprehension of the average man or woman. In his *Worlds Without End* (Toronto: The Musson Book Company, 1935, $1.50) Dr Jones writes simply and entertainingly of such matters as the moon, the planets, comets and shooting stars, the sun, giant and dwarf stars, the question of life in other worlds, twin stars, the age and evolution of the stars, the Milky Way, and so forth. His admirable facility in using homely examples to explain celestial facts is illustrated in many such passages as this: "The force of gravity on the Moon is only about one-sixth of its value on the Earth. A high jumper who can scale 6 feet on the Earth could with the same expenditure of effort jump to a height of 36 feet on the Moon. A moderate golfer who cannot drive the ball for more than 150 yards would be delighted, if he were on the Moon, to find that he was driving it half a mile."

* * *

When the French do a thing they do it thoroughly. Some years ago work was commenced upon an ambitious *Géographie Universelle*, under the direction of P. Vidal de la Blache and L. Gallois. Divided into 15 parts, and many of these in two volumes of about 300 pages each, the monumental work has now reached Tome xiii. *Amérique Septentrionale* (Paris: Librairie Armand Colin, 1935, 90 fr.) is in two volumes, of which the first, now published, includes Canada and the continent generally, the second volume to follow being concerned specifically with the United States. The present volume is edited by Henri Baulig, of the University of Strasbourg. It deals, with admirable precision and accuracy, with the structure of the continent, its seas and waterways, climate, fauna and flora, native inhabitants, discovery and colonization. The section devoted to Canada, which includes also Alaska, Newfoundland and Labrador, discusses the characteristics of each section of the northern half of North America, with particular regard to natural resources and their development. The work is very fully illustrated with maps, diagrams and photographs, and, within its field, leaves very little to be desired.

* * *

Gordon East, in his *Historical Geography of Europe* (Toronto: S. J. Reginald Saunders, 1935, $5) reminds us that recognition of this as a distinct and important branch of study is a matter of very recent growth. He quotes one English professor as describing historical geography as a study 'somehow concerning history and maps,' while another dismissed it as an illegitimate form of history. And this within the last few years. But if historical geography has only recently come into its own, it is fortunate in counting among its exponents such men as Mr East, who possess the background and the skill to present man in relation to his environment in a field of such supreme importance as Europe. One must commend his judgment in choosing, in such a definitely new subject, to "substitute for the pursuit of wide generalization the careful study of particular illustrative cases."

* * *

One of the classics of the Fur Trade is Hiram Martin Chittenden's *The American Fur Trade of the Far West*, and it is a matter of congratulation to students of the subject that it is now possible to add this formerly rare work to their libraries, with the added advantage of an Introduction and notes by Stallo Vinton and a sketch of the author by

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Edmond S. Meany (New York: The Press of the Pioneers, 1935, 2 vols., $15). While Chittenden's work deals specifically with the fur trade of the United States, and particularly with the Missouri, Rocky Mountain, and American Companies, there are many references to the two big Canadian fur-trading companies, as well as to Dr McLaughlin, Donald McKenzie, Peter Skene Ogden, David Thompson and other men associated with the North West Company or the Hudson's Bay Company. Apart from that, Chittenden's work illustrates the relationship of the fur trade to the story of the western tribes, the western movement of population, and the growth of knowledge of the geography of the western half of the continent.

* * *

In the history of mountain-climbing there have been few finer or more tragic adventures than the German attempt on Nanga Parbat in 1934, the story of which is told by Fritz Bechtold in *Nanga Parbat Adventure* (Toronto: Musson Book Company, 1935, $3.50). This giant of the Himalayas, 26,642 feet, had been attacked unsuccessfully by Willy Merkl and his companions in 1932, and somewhere on its terrific precipices A. F. Mummery had lost his life in 1895. In 1934 camp after camp was established, under conditions sometimes of almost incredible difficulty, and some of the party reached over 25,000 feet. But Nanga Parbat was too much for even these heroic souls, European and Asiatic. They did all that man could do, first to conquer the peak, and then to rescue their companions storm-bound in the higher camps. Merkl and several of his German comrades and Darjeeling veterans died in the blizzard. The rest were forced to lift the siege. The photographs, taken often under conditions of extreme difficulty, can only be described as superb.

* * *

Those who have read Peter Fleming's book "*Ones Company*" will recall his meeting G. J. Yorke in Nanking and their journey together to Kiangsi to get first-hand impressions of the Chinese Communists. Mr Yorke describes this and other journeys in *China Changes* (Jonathan Cape: Toronto, 1935, $3). He gives a vivid account of the last, terrible Yangtse flood and of its harvest of death and suffering; he travels north to Jehol as a war correspondent; seeks peace for a change in a Buddhist hermitage; flies to Foochow in a Chinese aeroplane and studies the ways of the rebels in Fukien. An account of present-day conditions in China by a well-informed and unprejudiced observer that well repays reading.